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ABSTRACT

This book contains practical information that reflects new developments in sports participation for individuals with disabilities. The focus is on meeting the challenges of the outdoor environment, learning through appropriate and safe play, and keeping fit through active leisure. Specifics include practical aspects of camping and outdoor programs, teaching techniques for aquatic recreation and exercise, educational play for preschool children with disabilities, modifications for play equipment, and ideas for facilitating play skills. The publication is divided into three sections. (1) "Outdoor and Adventure Recreation" includes the following articles: "Practical Aspects of Camping for Individuals with Disabilities" (Susan F. McConnell), "Aquatic Adventure Recreation" (Susan J. Grosse), "Adventure Recreation Directory" (Susan J. Gavron), and "Outdoor and Adventure Programs: Complementing Individual Education Programs and Treatment Plan Objectives" (Gary M. Robb, Editor); (2) "Play Opportunities for All" is comprised of: "Creating Leisure Opportunities for Children with Disabilities" (Claire Foret, Mary Ann Loeffler, Marcia Jean Carter), "Educational Play for Preschool Children with Disabilities" (Michael Horvat, D. Michael Malone, Teresa Deener), "Facilitating Play Skills: A Developmental Approach for Children with Disabilities" (Sally Leme), "Play Equipment" (James F. Cowart), "Project SIMPLE: Activities for Individuals with Sensory Impairments and Multihandicaps" (Lauren Lieberman), and "Table Games for Leisure and Education" (Susan J. Grosse); and (3) "Fitness and Leisure" contains: "Aerobic Dance" (Susan J. Grosse), "Water Exercise" (Sharon Burgess, Tim Davis), and "Physical Fitness Assessment: Some Questions and Answers" (Francis X. Short). (LL)

PLAY AND RECREATION FOR INDIVIDUALS WITH DISABILITIES:

Practical Pointers

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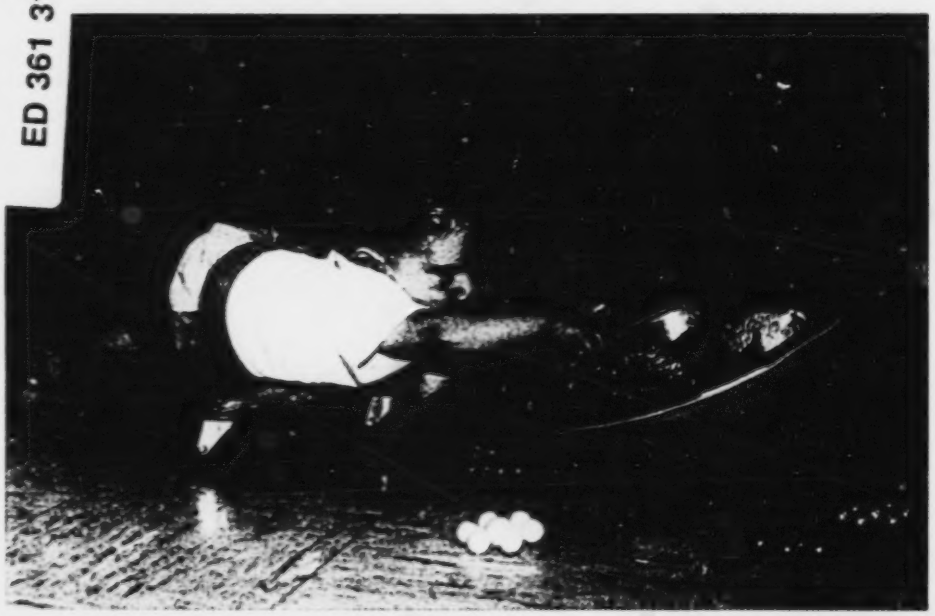

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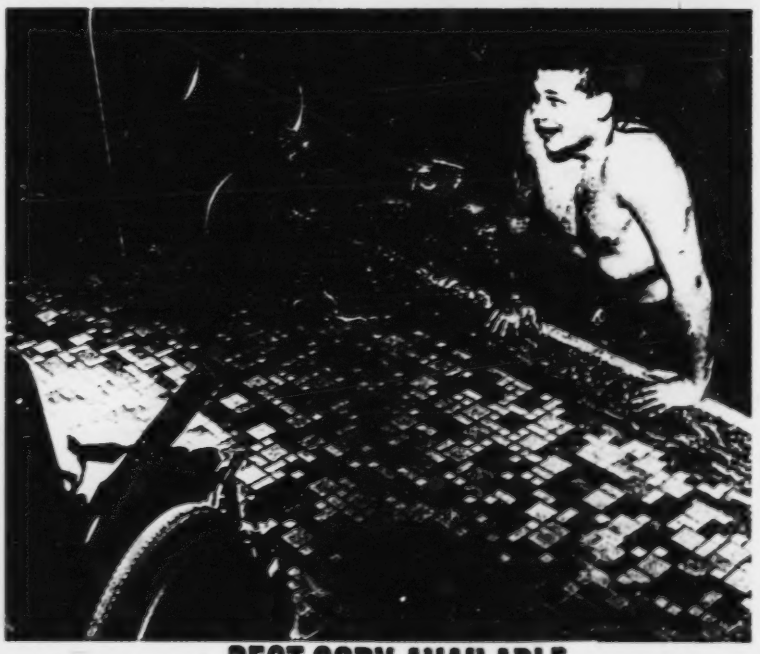

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Play and Recreation for Individuals with Disabilities: Practical Pointers

Susan J. Grosse
Donna Thompson
Editors

Sponsored by the
Adapted Physical Activity Council of the Association for Research, Administration, Professional Councils and Societies

An association of the
American Alliance for Health, Physical Education, Recreation and Dance

The American Alliance for Health, Physical Education, Recreation and Dance is an educational organization designed to support, encourage, and provide assistance to member groups and their personnel nationwide as they initiate, develop, and conduct programs in health, leisure, and movement-related activities. The Alliance seeks to:

- Encourage, guide, and support professional growth and development in health, leisure, and movement-related programs based on individual needs, interests, and capabilities.
- Communicate the importance of health, leisure, and movement-related activities as they contribute to human well-being.
- Encourage and facilitate research which will enrich health, leisure, and movement-related activities and to disseminate the findings to professionals and the public.
- Develop and evaluate standards and guidelines for personnel and programs in health, leisure, and movement-related activities.
- Coordinate and administer a planned program of professional, public, and government relations that will improve education in areas of health, leisure, and movement-related activities.
- Conduct other activities for the public benefit.

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Foreword

From 1977 through 1982 the Information and Research Utilization Center, Unit on Programs for the Handicapped of the American Alliance for Health, Physical Education, Recreation and Dance, published a series of monographs titled *Practical Pointers*. Julian U. Stein, then director of the unit, compiled a vast array of teaching techniques, activity adaptations, equipment modifications, programming information, coaching hints, skill development strategies, and curriculum data. He searched for practitioners in the field to author Pointers in their particular area of expertise. Where a need for information existed and no author was available, Stein researched and wrote the material himself. The result was 60 monographs published in five volumes.

In 1989, 20 original Pointers were compiled and published in book form. *The Best of Practical Pointers* contained practical information written by teachers for teachers. Contents were a result of real life teaching experiences with special populations. A wide range of activities was covered, with the exception of team and individual sports.

Then in 1991, *Sport Instruction for Individuals with Disabilities* was published. It included the "best" of the original sports Pointers along with many new Pointers developed especially for the publication. Again, teachers wrote for teachers, reflecting new developments in sport participation for individuals with disabilities.

The Practical Pointers tradition is being continued in *Play and Recreation for Individuals with Disabilities*. All but one of the articles were written especially for this volume, reflecting the new opportunities now challenging individuals with disabilities. The Americans with Disabilities Act of 1990 has opened the door for play, recreation, and leisure experiences. Activity across the life span, from playground to spa to wilderness adventure, is considered in this new collection. Meeting the challenges of the outdoor environment, learning through appropriate and safe play, and keeping fit through active leisure provide the focus for this book.

The Adapted Physical Activity Council of the Alliance presents this publication to assure that practical information continues to be available to the profession. Many people have helped to make it possible. Ray Ciszek of the Alliance staff has been unendingly supportive of the project. Our past editorial committee (Sue Gavron, Carol Cooper, and Joe Huber) has given direction and stability to the continuing effort. Sincere appreciation is expressed to Julian U. Stein for his time, talent, and expertise in developing the original Practical Pointers and for his continued involvement in the development of new practical material. Gratitude is due the authors of these articles, who had the innovative spirit to develop techniques and also the willingness to share with others. Thank you one and all!

Users of this publication will also be interested in its companion volume, *Leisure Opportunities for Individuals with Disabilities: Legal Issues*, another project sponsored by the Adapted Physical Activity Council.

SUSAN J. GROSSE
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Section One

OUTDOOR AND ADVENTURE RECREATION

Practical Aspects of Camping for Individuals with Disabilities

Susan F. McConnell

"The summer camp is not to do things for children, but with children; not to make life easy for children by taking away all chores and work, but to provide a living situation, for a few weeks of the year, which calls for the active participation, on the part of every child, in some of the daily chores involved in living and sharing of life in a group. It is the high privilege of the summer camp to provide for a growth experience for children in the fullest meaning of that term. Children do not grow — really grow as persons, by being amused, entertained, waited on, and by pushing buttons for what they want.

"Camping at its best is for some youth the ultimate in human experience: an ecstatic awareness of a physical universe clothed in beauty and majesty; a fraternal awareness out of which springs a compelling sense of universal brotherhood; a spiritual awareness that transcends all dogma and impels man to bow in adoration and worship, only to arise with a deeper sense of worth and dignity as a child of the Creator." (Johnson, 1960, p. 23)

Camping for individuals with disabilities can be traced back over 100 years. However, it wasn't until the late 1930s that a concentrated effort was made to provide opportunities for individuals with disabilities. Early camping programs centered on therapeutic and educational treatment plans. Since the 1960s emphasis has been centered on development of the total person through the enjoyment and challenge of the out-of-doors.

According to Armand Ball (1990) one of the most critical elements in serving individuals with disabilities in camping is for camp administrators to have a knowledge base of disabilities and know how to serve individuals with disabilities before instituting a specialized program. Staff need to have additional training and understanding to better serve campers with disabilities. Camp staff can not assume a camper with a disability cannot do a specific activity because of the disability. Today camp programming must be approached with alternatives to traditional ways of doing things to better serve all campers.

Benefits of Camping Experiences

The many benefits of organized camp experiences for individuals with disabilities include social growth, enhancement of self-worth, skill learning, adventure challenge, vocational development, and fun.

Social Growth

In informal camp group living situations away from home, individuals with disabilities learn to live with peers. No longer are mom, dad, or guardians there to take care of needs, wants, and desires or to intervene when things get rough. Campers learn how to ask for help. There is an appreciation of interdependence by campers coming from informal living and working together toward common goals. Individuals learn to appreciate group cooperation and sharing of common experiences. Within group living situations, one has to learn to adjust to needs of others as well as to take care of one's own needs.

Camp provides a positive atmosphere for new relationships to develop with other campers and staff. Through interaction with others while learning new skills and practicing old skills, new relationships develop. As a camper with a disability becomes comfortable in a new setting and in new roles, self-confidence begins to build. This provides impetus and motivation to try additional new and challenging activities.

Enhancement of Self-Worth

Along with growth of peer relationships comes opportunities for self-growth. Individuals with disabilities have the same interests, needs, and wishes for a positive camping experience as persons without disabilities. As campers work together trying to overcome major physical, psychological, social, and attitudinal obstacles a helping atmosphere develops. Camp provides an informal and unique setting for this individual growth to happen.

Individuals with disabilities have opportunities to focus on skills that will aid in self-development. Camp provides an unequaled setting to learn self-respect and respect for others, emphasizing what they can do rather than what they can not do. A camper no longer has to pretend to be someone else and can become self-reliant and able to focus on the person he or she is.

There are opportunities to learn an understanding of oneself in relationship to others within the living unit. Camp provides settings to focus on abilities rather than disabilities. At camp ability becomes primary and disability becomes secondary. For many individuals with a disability, camp provides the first opportunity to experience success. This, then, enables campers opportunities to become their own person with talents and abilities, creating an appreciation of one's own personal strength.

Skill Learning

Camping offers individuals with disabilities opportunities to learn new leisure, outdoor education, and recreation skills through participation in small and large groups. Camping and adventure outdoor experiences, led by group leaders who facilitate the learning and experiential process, give individuals with disabilities new skills and experiences. Camping programs often start with day camping and/or weekend camping and progress through residential camping. When success happens at each level, an individual can move on to adventure and challenge programming.

Adventure Challenge

During the past decade there has been particular growth of challenge and adventure programs to meet needs of individuals with disabilities. Outward Bound programming has been the model upon which many adventure and challenge programs have been developed. Each program varies in format, technique, and content depending upon program setting and needs of participants. Outward Bound began integrating individuals with disabilities as early as the 1960s. By the 1980s Outward Bound integrated individuals with disabilities into groups of eight: four individuals with disabilities and four without disabilities. Through activities such as backpacking, rock climbing, whitewater rafting, canoeing, and kayaking, personal challenges are provided while fostering interpersonal interaction and small group interaction.

Challenge activities are carefully selected and introduced. Each activity has specific objectives, challenging enough to produce stress but not so difficult that failure results (Kennedy, 1991, p. 195). Challenge/adventure programs provide solid, action-oriented challenges while offering participants opportunities for physical expression and personal achievement. Adventure camping or challenge activities offer activities requiring concentration, discipline, and trust in self and in others (Kennedy, 1991, p. 200).

Vocational Development

Participation in camping programs often provides opportunities for future employment in the out-of-doors and vocational exploration as camp counselors. At camp, campers can choose activities that are of interest and gain skills in new and creative activities. These skills and interests are useful as a camper gains experience and reaches the age requirement to become a camp counselor. Individuals also encounter nature, developing interests which can lead to jobs in forestry, park management, recreation leadership, conservation, and recreation therapy.

With the advent of the Americans with Disabilities Act (ADA) opportunities for individuals with disabilities to be employed in various positions within camping and outdoor education structures is a reality. The American Camping Association has a book of job descriptions entitled *It's My Job* (Klein, 1992) focusing on structure and format needed to develop job descriptions to meet the ADA requirements.

Fun

One of the greatest benefits that an organized camp experience can provide campers is fun. Camping programs should provide program flexibility geared to meeting needs of each individual camper, while stressing not only educational experiences, but also fun! To a camper, one main reason for coming to camp is to have fun! Fun comes from trying new activities, making new friends, being with old friends, learning new skills, and gaining self-respect and pride from doing one's best. A fun camp experience can provide a lifetime of good memories.

Matching Camps and Campers

Matching camps and campers is a difficult process for parents, guardians, and camp directors. The process requires time and effort to research camps of interest. Campers and parents may have different expectations for the camping experience. Selecting a camp is not an easy process for any parent; many things must be considered, especially for a camper with a disability. Time spent searching for the right camp can pay off in a lifetime investment in skills, independence, and self-reliance, in addition to lifelong values and memories.

Types of Camps

To ensure a good camping experience parents and children must select a camp appropriate to the needs and interests of individual campers. With implementation of the ADA, camps are required to be accessible to all people. Camper and parent/guardian expectations should be determined before looking for a camp to attend. Can the camp meet the needs of the camper with a disability without changing the entire camp's goals and objectives? ADA requires camps to do what is readily achievable but they are not expected to change the nature of their program to accommodate campers with a disability.

DAY CAMP campers go to camp during the day and return home at night. Transportation is often by

school bus with the ride lasting usually about an hour. Day camp is a good experience for a younger camper who has not been away from home or for a camper who just wants to try going to camp, but is not ready for a residential experience.

WEEKEND/TROOP/FAMILY CAMPS are short-term camping experiences and may have volunteer or paid staff available to assist with camp programming. This is a good introductory experience for children who are reluctant to go away for a week or more to a resident camp, but who want some kind of overnight experience. Here it is more likely family members or school friends can all camp together.

RESIDENT CAMPS have sessions ranging from five days to eight weeks. Campers live away from home sleeping in tents, cabins, or lodges. Staff either sleep in the same building or are nearby in a cabin or platform tent. Campers and staff together set goals for what is to be accomplished during the camp session.

Specialty Camps for Individuals with Disabilities

There are advantages and disadvantages for an individual with a disability to attend a special camp for the disabled. Advantages include facilities designed to be barrier free, higher camper to staff ratio, more sophisticated medical staff, and common bonds found in a disabled peer group. In addition, specialized health education may take place. Special diets can be easily provided, if needed, in specialty camps. Staff members often have prior experience in adapting and individualizing programs.

Some children with asthma, some orthopedic disabilities, diabetes, cancer, cystic fibrosis and/or degenerative conditions do better in a camp atmosphere geared for their particular disability. They need the care and nurturing that can happen in specialized camps.

Many feel alone with their disability, and at camp they find they are no longer excluded from the group because they *are* the group. These children often need health education and specialized medical care for their disability. When this is provided at camp, they can learn to manage their own self-care plan and learn additional means of coping with their disability.

Other benefits of specialty camps for campers with disabilities include:

- Acceptance of limitations by camp community.
- Sharing experiences with campers having similar disabilities.
- Solving problems as a part of experiences common to groups.
- Having similar situational interests and abilities.
- Being able to play games in a fairly equalized competitive arena.

Specialized camps for children with disabilities have criteria for camper selection that facilitate the application process. While the goal of all camps is to provide the best possible camping experience in the least restrictive environment, it must be understood some campers may be denied opportunities for participation if the nature of the disability would alter the experience the camp is designed to give. Not all camps will be able to accommodate extremes of disabilities even if they are accessible (National Camp Executives Group, 1992).

Criteria for camper selection process might include:

- Severity of condition.
- Previous camping experience.
- Parent/camper assessment of potential benefits.
- Physician assessment of potential benefits.
- Appropriate age limitation.

Specialty camps also have disadvantages. When campers attend specialized camps for individuals with disabilities they are not living as a part of "normal" society; they are not a part of the real world. Campers do not have opportunities to interact with nondisabled peers. Attending a mainstreamed camp allows for interaction between individuals with disabilities and nondisabled in an informal, nonthreatening environment. Specialized camps for individuals with disabilities usually have campers with more severe medical and disability problems than mainstreamed camps.

Specialized camps for individuals with disabilities tend to cost more to operate than other camps. There is the high cost of specialized program staff as well as specialized medical staff. In addition, specialized camps for campers with disabilities usually have a higher ratio of staff to campers, making staff salaries and benefits a large portion of camp budgets.

Mainstreamed Camp Experiences

Mainstreamed camping provides opportunities for more normal experience and program than specialized camps for individuals with disabilities. There is usually a wider range of program possibilities to meet needs of all campers. There are often more opportunities for cooperation and competition on different levels. There is also opportunity for campers with disabilities and campers without disabilities to earn respect and gain new friends while learning to cooperate and compete on different levels of interaction. This can be a rewarding experience for both campers and staff.

Not all children with disabilities may be ready for mainstreamed camping experiences. Some have been sheltered too much by their family and need support from the specialty group environment. Some potential campers are not ready for a less restrictive environment. Camp directors, parents, teachers, and campers must realize there are more individuals with disabling conditions than can be handled by specialized camps. With passage of the ADA, campers with disabilities must be served in mainstreamed camps. It will not be an easy process for camps to adapt to integrating campers with disabilities and it will not happen overnight. When mainstreaming does happen it is a valuable experience for all. However, there will still be need for specialized camps for campers with disabilities.

Who Runs the Camp?

Camp administration covers everything happening at camp, from program, to campers, to staff, and it is not an easy job. One function of the camp director in most camps is to assist parents in matching camps and campers. It is important for camp administrators to understand disabling conditions so they are able to assist parents in selecting the right camp. Another important function of the camp administrator is to assist camp staff in understanding how to adapt program to campers. The camp director sets the tone for what happens at camp. If the match is not a good match the director must intervene.

AGENCY CAMPS are supported by United Charities, United Ways, Community Chests, specific disability associations, Girl Scouts, and Boy Scouts. Fees are often subsidized; camperships and/or scholarships may be available, making fees more reasonable. Nonprofit agency camps are able to take advantage of state and federal money with programs such as USDA surplus commodities, special milk program, summer feeding program, and camper assistance funds.

PRIVATE AND INDEPENDENT CAMPS receive no federal or state money, nor are they subsidized. In most cases they are required to pay federal and state taxes, depending upon the state where the camp is located. Fees are generally higher, to cover costs which are not subsidized. Private and independent camps often take campers for sessions running four to eight weeks.

SCHOOL/MUNICIPAL CAMPS are run by school districts, universities, and city/county recreation departments. They may be day or resident, focusing on special education, outdoor education, and/or recreation. They may be curriculum based, such as basketball, computer, or reading camp, offering an educational laboratory for undergraduate and graduate students studying camping and outdoor education. Some school districts operate summer camp programs on a school campus as an extension of the education program. Many of these programs are designed to give each child a place to feel secure, gain self-confidence, have new experiences, gain new skills, while emphasizing and reinforcing skills learned throughout the school year. Many of the school-based camps are run as day camps. Fees are often subsidized by school district or municipality.

Facilitating the Camp Experience

Good camp experiences start with a well organized admission procedure. All camps have admission requirements used to screen and select campers. Such requirements are necessary to ensure campers have the best possible placement and to match camper needs with camp environment and program.

Most camps will require:

- Parent/guardian permission.
- Physician's permission.
- Current medical examination.
- Statement of disability and disability limitations.

Mainstream camps may also require:

- Evidence of camper ability to handle self-care needs with little or no assistance.
- Evidence of camper stamina to attend camp without undue fatigue or illness.
- Evidence of reasonable camper adjustment to disability and to camp.

Most camp directors prefer a precamp personal interview with the camper and family. Input from teachers, and possibly the camper's physician, may be helpful to ensure camp is the best environment for the child. A family precamp visit is also an important step in the camp selection process, making camp a more familiar place when it is time to attend.

It is a difficult situation when a camper must be sent home because the camper has a disability more severe than expected. Sometimes inadequate or incomplete information prior to arrival at camp can cause this unfortunate situation to happen. Such lack of information can cause the individual with a disability to have one more failure added to the list of repeated failures.

Preparing for camp

Preparing a camper with a disability to go to camp is an extremely important part of the camp experience. The camper must be prepared to go to camp without mom, dad, or guardian, long before the camp season arrives. For some campers this preparation must begin six months to a year prior to camp.

Suggestions to assist a camper in getting ready to go to camp include:

- Begin with an overnight to grandmother's house or to another friend's or relative's home.
- Visit a camp the child might attend while camp is in session.
- Assist child in becoming more independent by teaching self-care as it affects their disability (learning how to take off and put on braces or appliances, for example).
- Try a day camp or weekend camp experience before attempting a longer session at a resident camp.
- Discuss with child what fun it is to go to camp, what is this magical place called camp, what happens at camp, emphasizing the fun aspect of camp; however, be realistic about the experience.
- Give child many different types of large group activity experiences.
- Practice camping skills at home, building a fire, cooking meals out-of-doors, using a tent and sleeping bag in the backyard.
- Have an overnight in the backyard, listen to sounds of night, and then talk about the experience.
- Familiarize child about what their medication is, how often it is taken, and why they take it.
- Have child go to camp with a friend.

When a camper with a disability goes to camp, it is sometimes helpful to send additional items that might make care and function easier while at camp, such as:

- Dishes and silverware, especially if they are adapted for child's needs.
- Dycem, to hold dishes in place while eating or to use while doing arts and crafts (dycem is not provided by the camp).
- Sweatpants and sweat shirts that can get wet and can be used for protection while transferring to boats and canoes.
- Extra socks to be used for heel and toe protection.
- Own wheelchair in good repair.
- Crutches if able to use them in addition to wheelchair
- Absorbent pads if child is incontinent.
- Warm clothes (campers tend to be chilled when getting out of the water).
- Extra plastic bags of various sizes.
- Therapy belt, if needed to assist in transferring camper.
- Clothes that are easy to put on and take off, snaps, and/or Velcro instead of buttons and zippers.
- Plastic surgical tape that can be used in adapting equipment to camper's needs.

Preparing for camp also means information sharing. Certain information is needed by the camp in order to process applications and to assist in living unit placement. Campers with special medical needs usually require a higher level of supervision in activities such as aquatics and sports. In states having waterfront safety codes, ratios of supervision may vary with age of campers. In camps where campers with cognitive disabilities attend, stricter standards are usually enforced. One-on-one supervision may be required for campers with seizure disorders in high risk and challenge activities.

The following information should be shared with staff for program planning needs:

- Camper name, age, school grade, or placement.
- Address.

- Telephone number.
- Health insurance plan and appropriate group numbers.
- Whom to contact in case of emergency.
- Medical disability description.
- Food preference.
- Food allergies.
- Allergies.
- Seizure disorders.
- Heart conditions.
- Toileting needs.
- Night care.
- Mobility ability.
- Behavior characteristics.
- Dressing needs.
- Medical limitations.
- Camper's talents and abilities.
- Camper's interests (e.g., photography, aquatics, arts and crafts).
- Camper's previous camp experience.

Camps have an obligation to clearly state an enrollment policy of who they can serve within their programs. The ADA mandates camps and programs be accessible to all. However, camps do have the option of refusing or canceling applications of campers whose needs are more extensive than can be accommodated by the camp, if acceptance of the camper would alter the nature of the program, and/or if a successful camp experience does not appear possible.

First Days at Camp

There is a wide range of abilities among children with disabilities, just as there is among their nondisabled counterparts. Camp programs sometimes need to be modified to facilitate participation by children with disabilities. Activities of daily living may require some modification and skills must be broken down into basic component parts. A routine should be followed that is not altered unless absolutely necessary.

Some campers with disabilities have been disabled since birth. They may have developed adaptions allowing them to participate in activities regardless of the impact of their disability. Allow campers to proceed at their own involvement level as long as they are successful and the experience is positive. If they need additional alternatives, make suggestions. Do not assume every activity will need to be adapted to meet needs of campers with disabilities. Keep activities as realistic as possible for all campers. If adaptions are needed, seek input from campers and staff with disabilities.

All campers have certain fears during their first few days at camp. To ease their apprehension, do activities familiar to them. Some children will hang back until they are comfortable; help get them involved by keeping score, opening cans for a cookout, holding equipment, or getting equipment.

Selected Camp Activities and Modifications

If modifications are necessary in the camp programming, make modifications for each camper on an individual basis, keeping activities as close to original format as possible. A camper with a disability does not find it fun to participate in an activity completely different from the original. When this does happen it becomes one more loss for a camper with a disability. Modify only what needs to be modified, not the entire activity.

In some instances a skill may be modified by substituting another camper for a component that is impossible to achieve. Softball modifications may be made by having a camper in a wheelchair pushed around the bases by another camper. Another modification might be to change the size of the softball diamond or size of the ball. In situations where there is no specific answer camp counselors should be creative in approaching activity/skill breakdowns. Two people with the same disability may not need the same, or even similar adaptations (Peterson, 1984, p. 205).

In facilitating participation for individuals with disabilities there are several general hints applicable to almost any new and/or unfamiliar situation. They include:

- Explain the task, including printed and pictorial as well as verbal information where appropriate.
- Give step-by-step instructions regarding what needs to be done.
- Demonstrate the activity.
- Provide verbal cues as well as hands-on assistance, if needed to ensure success.
- Praise progress.
- Combine tasks and task sequences only after initial single tasks are familiar.

- For more difficult activities, pair participants for cooperative endeavor.
- Before providing assistance, ask a camper if assistance is needed. Individuals with disabilities often know what help they need and how help can be provided.

Typical camp activities and suggested modifications for individuals with disabilities are described in the following pages.

Activities of Daily Living

- Dressing can be facilitated by suggesting individuals with disabilities bring clothing modified for easy access. This might include:
  - — Velcro fasteners and/or large snaps instead of buttons or zippers.
  - — Elastic waist bands instead of belts.
  - — Shoes with Velcro fastening or elastic ties in stead of laces.
  - — T-shirts with front buttons/placket opening.
- Hygiene can be facilitated by suggesting individuals with disabilities bring:
  - — Wash mitt instead of wash cloth.
  - — Large bath towel.
- Eating can be facilitated by:
  - — Suggesting campers bring any assistive devices they use at home for self-feeding.
  - — Arranging the table set-up in the same way for each meal.
  - — Presenting food in smaller, easier to handle portions; cutting food into small pieces when necessary; including finger foods.
  - — Providing disposable straws, extra napkins, and a wet wash rag.
  - using dycem to keep dishes from slipping.
- Stress cleanliness and appropriate self-care from the first day at camp. Solve problems early. Dirty, smelly, hungry campers make for a negative experience for everyone!

Kapers

Kapers are jobs needing to be done in order to keep camp, unit, program, and personal living areas clean. The work is shared by all campers, usually on a rotating basis. All campers, including those with disabilities, learn responsibility for self and others by participating in kapers. To facilitate successful accomplishment of kapers:

- Establish a daily routine for doing kapers.
- Establish a buddy system so no campers have to do their kaper alone.
- Rotate kapers so no camper has the same job all during camp.
- Assist campers, if necessary, but do not do the kaper for them.
- Stress pride in the contribution kapers make to total camp environment.

Aquatics

Camp waterfronts providing services to individuals with disabilities should practice the same safety precautions, enforce the same rules, and maintain the same level of cleanliness as any other camp waterfront. Safety rules should not be altered to permit participation for individuals with disabilities. For example, if a camper must pass a test in order to go out in a boat, that test applies to ALL campers. However, ALL campers, including campers with disabilities, should have access to the camp waterfront and waterfront activities appropriate to their level of knowledge and skill. To facilitate participation in camp waterfront activities it might be necessary to:

- Increase amount of supervision by certified lifeguards.
- Increase amount of assistance by general camp staff.
- Provide in-water physical assistance and/or supervision.
- Provide assistive flotation devices. However, a flotation device is not a substitute for hands-on assistance and/or supervision. Any camper with a disability using a flotation device should be closely supervised at all times.
- Provide a means of transfer from wheelchair to dock, boat, beach, and/or water for campers needing assistance.
- Allow campers to wear additional clothing, e.g., long sleeved T-shirt, beach shoes, long pants, hat, gloves. Sunburn, sand/rock abrasions, and insect bites may cause major problems for an individual with a disability.
- Structure the waterfront setting for maximum safety, including:
  - — Clear depth boundary markings, including physical divisions between areas of use as well as variant depth.
  - — Implementation of a buddy system with checking done no less than every ten minutes.
  - — Establishment and practice of a detailed emergency action plan.
  - — Camper orientation to all aspects of waterfront safety before participation in activities.
  - — Use of visual (lights) as well as audible (whistle/horn) signals.

- Facilitate fishing by beginning with cane poles and worms. As campers become more proficient increase complication of gear. A Garcia Handigear and harness can be used to assist campers with rod holding if they have upper extremity disabilities. Automatic push button reels are helpful for individuals with upper extremity weakness or mobility impairment.
- Small craft adaptations might include:
  - — Use of transfer board or lift to allow campers with physical disabilities to board a craft.
  - — Modifying gunwales with padding and/or hand grips to facilitate boarding.
  - — Padding on the bottom of craft or on seats to lessen chance of abrasions.
  - — Putting dycem on the bottom of the craft or the seat to prevent slipping.
  - — Using backrests.
  - — Lowering craft seats.
  - — Using lighter weight paddles for individuals with muscle weakness and heavier paddles for individuals with tremors or kinesthetic awareness problems.
  - — Modifying oar or paddle grips (see Appendix G); bicycle grips, foam and tape, Firm Fist Grip, and mitts and Velcro can facilitate small craft activity for campers with disabilities.
  - — Making a crutch-paddle (see Appendix G) for use by a camper with physical disability.
  - — Wearing additional clothing to prevent abrasions.
  - — Sitting on craft bottom instead of seat to increase stability.

Height adjustable work areas make tasks easier for campers in wheelchairs. Special containers help keep tools handy when working on crafts.

Arts and Crafts

All campers like to have something to take home, something they made, something that says they were at camp. To facilitate participation in arts and crafts activities:

- Have a facility that includes height adjustable tables and lower clean-up areas, sinks, and counters.
- Provide written and pictorial as well as verbal directions.
- Provide a display of completed sample projects and allow campers a chance to examine samples, including hands-on manipulation.
- Provide craft implements in a variety of sizes.
- Build up or increase size of handles to facilitate grasp.
- Use special holders for craft materials, rather than leave them loose on a work table. This allows campers to find things easily and keeps items from falling onto the floor, where they may be inaccessible.
- Provide large smocks to cover clothes (even a garbage bag will do!).
- Vary textures and colors to increase awareness and involvement in the creative process.
- Stress appreciation for work of each individual camper. All items do not have to look the same or conform to a model or demonstration.

Cookouts

Being able to participate in outdoor activities is always a high point of any camp experience. Cooking a meal over an open fire is often a first-time event for a camper with a disability (both the cooking part and the open fire part). To facilitate safe and enjoyable participation in cookout activities:

- Do not assume campers already know simple food preparation and cooking skills. Often children with disabilities have not had the same home/family experiences nondisabled children have had. These skills may need to be taught, including:
  - — Hygiene before and during food preparation and handling.
  - — Care, handling, and use of sharp implements (knives, scissors, can openers, ice picks, can edges, can lids).
  - — Use of hot pads, mitts, trivets.
  - — Safety near hot/boiling liquids, frying pans, baking ovens, hot pots.
- Teach fire building/fire tending skills before a fire must be built and used to cook a meal. Too many things to learn at one time can confuse any first-time camper.

- Divide tasks so everyone has something to do to contribute to the meal.
- Use an elevated fire pit or raised grill for easier access.
- Use long-handled utensils.
- Meals in foil or one-pot meals are easier to prepare, serve, and eat than multi-course/multi-pot meals.
- Watching (watching for water to boil), checking (checking to see pieces are cut small enough to cook quickly), and supervising (supervising of wood supply to see that tinder, kindling, and larger wood are all available and replenished as needed) are skills that can be contributed by campers.

Equestrian Activity/Horseback Riding

For many campers this is their first opportunity to see a horse up close, pat a mane, scratch behind ears or feed a carrot, let alone have a chance to ride. To facilitate horseback riding:

- Spend time allowing campers to get acquainted with the horses before any riding is to take place.
- Teach proper behavior around horses, including loudness of voice, effect of sudden loud noises.
- Include horse care and grooming activities in the get acquainted process.
- Have specialized equipment available as needed. This might include:
  - — Devonshire boot to prevent rider from slipping from stirrup; also good for campers with tight heel cords or weak ankles (see Appendix F).
  - — Peacock stirrup, a stirrup with break-away material to prevent rider's foot from getting caught in case of a fall (see Appendix F).
  - — Humes rein for campers with limited or absent hand/arm use; rider can put a hand or lower arm prosthesis into a loop that is then used to control the horse.
  - — Adaptive rein bar for campers who have use of only one hand (see Appendix F).
- Select gentle horses for campers having their first equestrian experiences.

Games and Sports

Games and sports will probably be the most familiar activities at camp because they are also part of most school programs. However, do not assume campers with disabilities have had the same learning experiences and have attained the same skill development as their nondisabled peers. Assistance and structuring may be needed to facilitate equitable participation for campers with disabilities.

It may be necessary to:

- Reduce size of playing area.
- Change height and placement of a target, e.g., lowering a basketball hoop or moving one archery target closer.
- Increase number of players on a team.
- Use limited flight balls, soft balls that are easier to handle, or balls with an audible sounding device (bell, beeper), making them easier to find.
- Hold or suspend objects that must be hit, e.g., a batting T or a tether ball.
- Modify rules by allowing additional strikes or additional bounces to a dribble.
- Build up grip area of equipment that must be held.
- Rotate players between active and inactive positions; double team positions.
- Use participation buddies.
- Include games that do not have a winner or loser.
- Emphasize success and abilities; each and every camper can make a positive effort to a team effort.
- Vary the sports provided so each camper can participate in a sport that is enjoyed.
- Avoid elimination games and games involving assault on others.

Shooting from a seated position, moving targets closer, and/or shooting cross-bow style can increase camper success at archery.

Nature

Living in the out-of-doors forces an interaction with the natural environment. Facilitating knowledge and understanding of the natural world not only enriches camp experiences, but also lays foundations for environmental awareness. Nature activity is an important part of camp.

To facilitate nature activity:

- Use a variety of mediums to provide information. Photos and drawings, printed data, dioramas, models, and specimens all add to verbal explanations.
- Encourage hands-on participation; look and touch!
- Stimulate all senses, not just sight and touch.
- Explore night as well as day, rain as well as sunshine, woods, marsh, and field as well as immediate camp area, cold as well as heat.
- Individualize color, texture, sound, and smell.
- Provide accessible nature trails, including touchable trail markers and audiotaped trail information.
- Emphasize noninterruption of the natural environment. Do not pick up baby animals for a closer look, cut branches for a better view, or flush birds just to see them fly.
- Not all aspects of the natural environment will be accessible to all people. Wilderness, by definition, will not be accessible to everyone.

Safety

Safety first and safety is no accident are more than just cute expressions. Safety must be planned, organized, and implemented in all camps and camp programs. From day one at camp a safety awareness should be cultivated in staff and campers, while still allowing fun and challenge activities to take place. In camp, natural camp environment can be cause for concern, especially when groups include campers with disabilities.

Each camp should look at its program, facilities, and maintenance to assess potential hazards. Records of past accidents will give camp administrators an indication of where accidents have happened and, possibly, reasons why these accidents occurred. Did accidents happen because of poor maintenance, poor camper supervision, poor program implementation, or because of natural hazards in the environment?

Following are suggestions for maximizing safety for all campers, including campers with disabilities.

General Camp Safety

- Have an appropriate camper/staff ratio. Younger campers, campers with less camp experience, and campers with disabilities all need additional staff for adequate supervision.
- Be sure staff members working in areas requiring specific training and/or certification have that certification and that the certification is current. Specific examples include waterfront (small craft as well as swim) and first aid areas.
- Obtain detailed background information on all campers, particularly information related to:
  - Specific nature of disabilities.
  - Specific nature and dosage of medications.
  - Contraindicated activities.
  - Allergies.
  - Emergency contact.
- Establish and enforce prerequisites for activities requiring advanced skills; e.g., swim skill for small craft use; a single overnight experience for a multinight trip.
- Teach all skills in appropriate, sequential order.
- Supervise handling and use of sharp implements, including arts and crafts tools, axes, saws, knives, and cooking implements.
- Supervise all fire related activities.
- Stress the buddy system. No camper should be allowed or encouraged to hike, swim, paddle, or work alone.
- Stress immediate reporting of all accidents.
- Stress immediate reporting of all hazards, natural or manmade, including equipment breakage.
- Mark and repair immediately any and all hazards.
- Have a camp emergency action plan; train staff in plan implementation including execution of a complete mock emergency drill.
- Continually teach and reinforce safe behavior in the natural environment. Campers must know not only what is safe and what isn't, but also what the consequences can be if they do not practice safety at all times.

Aquatics

- Provide additional certified lifeguards to supervise high risk campers. High risk may exist due to behavior problems, seizure disorders, multiple handicapping conditions, and/or severity of disability.
- Enforce prerequisite skill testing prior to participation in small craft activities. Do not let enthusiasm for campers with disabilities having new experiences override safety factors.

Safety precautions, such as wearing Coast Guard approved personal flotation devices, are important for all campers, and especially campers with disabilities.

- Closely supervise any campers using flotation devices.
- Be prepared to provide in-water support and assistance for individuals with severe disabilities.

Arts and Crafts

- When using craft tools and other sharp implements, do not assume prior knowledge or experience. Teach safe handling and use of any and all sharp implements. Provide direct supervision while any such tools are in use.
- Store hazardous materials in a locked area, inaccessible to campers.

Campfire/Cookouts

- When using knives, axes, and saws do not assume prior knowledge or experience. Teach safe handling and use of any and all cutting implements.
- Provide direct supervision of campers during use of knives, axes, and saws.
- Provide direct supervision during the lighting of any fire. Keep matches and other combustibles (self-lighting charcoal, lighter fluid) locked and inaccessible to campers.

Equestrian/Horseback Riding

- Be sure all riders have on proper clothing, long pants, shoes with a heel.
- Beginning riders, those with balance problems, and riders needing head protection should wear a helmet when on horseback.

Games and Sports

- Monitor all game areas for natural hazards (tree branches that fall down in the night, animal holes). Remove hazard or create barrier to isolate hazard from campers.
- Monitor all campers for signs of fatigue, heat exhaustion, or overexertion. Sometimes campers with disabilities do not know their own limitations.

Nature

- Know which campers are allergic to natural elements and animal/insect stings/bites. Have specific emergency procedures for such situations.
- Monitor the natural environment for hazards occurring due to changing elements. Remove hazards or barrier from camper contact. Do not assume campers will be able to assess danger in the natural camp environment.
- Teach and reinforce respect for animals in their natural habitat. A camper with a disability may not be able to escape from an upset critter who might pose no threat to a nondisabled camper capable of recognizing danger and moving away.

Appendix A
Questions a Camp Director Might Ask a Parent

Self-care—

Does child need assistance with self-care?
Can child do toileting alone?
Does child understand directions?
Does child make needs known?
Can child feed self?
Is child independent in self-care needs?

Mobility—

Can child walk without assistance?
Does child walk with crutches?
Does child use a wheelchair?
Does child use braces?
Is child able to remove and put on braces?
Can child transfer to and from wheelchair without assistance?
Can child maneuver own wheelchair?

Communication—

How does child communicate needs?
Does child have speech problems?
Does child have hearing problems?
Does child use hearing aid?
Does child know sign language?
Does child use American sign language?
Does child lip read?
Does child read print?
Does child read braille?
Does child use a communication board?
Does child use a Bliss communication board?

Medical—

Does child have bladder control?
Does child have bowel control?
Does child have seizures? How many per day?
Is child on seizure medication? What medication?
Does child's medical doctor recommend child attend camp?
Does child need a special diet?
What activities are contraindicated for child?

Adjustment—

Does child adjust well to new situations?
Does child want to go to camp?
Does child have fears about going to camp?
Has child gone to camp before?
Does child's teacher recommend camp as a valuable experience?
Does child relate well to other children with disabilities?
Does child relate well to nondisabled children?
Does child relate well to peers?
Does child have behavior problems?

General Questions—

Explain the child's disability.
Explain your concerns about child going to camp.
What special skills, talents does your child have?
Has your child attended other camps?
— day camp —— number of years
— resident camp —— number of years
— family/troop/weekend camp —— number of times

(Adapted from Vintin, 1979, p. 88 and Stein, 1981, pp. 27-30).

Appendix B
Questions a Parent, Teacher, or Doctor Might Ask a Camp Director

General Questions—

Is the camp an ACA accredited camp?
Is camp within one to two hours of home?
Is transportation provided? For a fee?
Is parent visitation possible?
What is the age range of campers?
Is camp a mainstreamed camp or a disability specialty camp?
What is the philosophy of the camp?
Is the program based on competition?
Is the program based on cooperative learning?
Are there strict behavior guidelines?
Are the campers challenged?
Does the camp focus on personal improvement? If so how?
Will camp accept a child with this specific disability and functional ability level?
Under what circumstances might a parent be notified of a problem and/or child sent home?

Questions About Staff Specialization—

What credentialed staff are at the camp?
- Certified lifeguards?
- Certified first aid/CPR (infant/child/adult)?
- Registered nurse?
- Licensed medical doctor?
- Certified water safety instructors?
- Certified adapted aquatic instructors?
- Certified smallcraft instructors?
- Certified horsemanship staff?
- Licensed special education staff?
- Registered respiratory therapists?
- Registered physical therapists?

Financial Questions—

What is the camp fee?
What does the camp fee cover?
Are there campership/scholarship monies available?
How much money does a camper need at camp?
What is the policy on refunds if a child becomes ill before arrival at camp?

Health, Safety, and Medical Questions—

Can most medical needs be taken care of by camp? If not, what do you do?
Is there a health center?
Is camp barrier free and handicapped accessible?
What is the distance to the nearest hospital?
Do staff know how to position a child in a wheelchair?
Do staff know how to put on and take off braces?
What if my child becomes homesick at camp and wants to call home?
How are behavior problems handled at camp?
What is the camper to staff ratio?

Questions About Program Activities—

What activities are offered?

Aquatics?	Archery?
Arts and crafts?	Campfires?
Ceremonies?	Dramatics?
Fishing?	Horseback riding?
Kapers?	Nature?
Smallcraft?	Sports, team?
Sports,individual?	Tripping?

Are high risk challenge activities offered?

Living Arrangement Questions—

What are the living arrangements?
platform tents? cabins?
lodge/building?
Do staff sleep in the cabins/tents with the campers?
How many campers and staff live in the tent, cabin, or building?
Where are ill campers housed?
Are facilities heated?
Are bathrooms close to living areas?

(Adapted from Vintin, 1979, p. 88 and Stein, 1981, pp. 27-30).

Appendix C
Agencies Operating Camps for Campers with Disabilities

Listed below are national agencies operating specialized camps for persons with disabilities.

American Diabetes Association
1600 Duke Street
Alexandria, VA 22314
800-232-3472

American Lung Association
1740 Broadway
New York, NY 10019
212-315-8700

American Foundation for the Blind
AFM Publications and Information Services Dept.
15 West 16th Street
New York, NY 10011
800-232-5463
send for—
Directory of Camps for Blind and Visually Impaired Children, Youth, and Adults
Catalog No. ISBN O-89128-159-2

Epilepsy Foundation of America
4351 Garden City Drive
Landover, MD 20785
301-459-3700

Muscular Dystrophy Association
810 Seventh Avenue
New York, NY 10019

National Camps for Blind Children
4444 South 52nd Street
Lincoln, NE 68516
212-586-0808

National Information Center on Deafness/LWD
800 Florida Ave., NE
Washington, DC 20002
202-651-5051

National Easter Seal Society
70 E. Lake Street
Chicago, IL 60601
Send for summer camps list; use self-addressed, stamped envelope

Appendix D
Challenge and Adventure Camping

Colorado Outdoor Education Center for the Handicapped, P.O. Box 697, Breckenridge, CO 80424 (303-453-6422). Offers year-round courses in backpacking, rock climbing, fishing, wheelchair camping, snowshoeing, ski touring, sled skiing, and mountain-orienteering for disabled persons. Courses are aimed at making positive lifestyle changes.

Courage North Camp, Courage Center, 3915 Golden Valley Road, Golden Valley, MN 55422 (612-588-0811). Camp offers extended wilderness canoe trips and horsepacking trips. Other activities offered: swimming, water skiing, fishing, nature study, and crafts.

Environmental Traveling Camp, Fort Mason Center, Bldg. C., San Francisco, CA 94123 (415-474-7662). Year-round program in whitewater rafting, backpacking, camping, mountain climbing, tobogganing, ski touring, and snowshoeing. Each program concentrates on safety procedures and leadership development.

Minnesota Outward Bound, P.O. Box 250, Long Lake, MN 55356 (612-473-5476). Offers canoe wilderness program featuring extended canoe travel through lake and wilderness, rock climbing, learning navigational skills, and time alone with minimal equipment.

National Sports Center for the Disabled, P.O. Box 36, Winter Park, CO 80482. New, accessible oval trail system in Winter Park, located in the Jim Creek area on national forest land adjacent to Winter Park Resort. This unique trail has half of the trail surfaced with finely crushed granite rock while the other half is a natural dirt trail with board walk spurs from main trail to camp sites, picnic areas, and fishing ponds. It is available for winter cross-country skiing and snowshoeing.

Vinland National Center, 3675 Ihduhapi Road, Loretto, MN 55357 (612-479-3555). Offers two-week wilderness canoe trips for small groups of individuals with disabilities. Trips include: camping, rock climbing, hiking, spelunking, swimming, fishing, horsepacking and whitewater kayaking.

Wilderness Inquiry II, 2929 4th Ave. South, Suite O, Minneapolis, MN 55408 (612-827-4001). Conducts year-round trips in wilderness areas in the United States and Canada for groups of disabled and able-bodied persons, summer canoe trips to the Boundary Waters or homesteading in wilderness areas. Winter brings workshops, dogsled trips, cross-country skiing, and snowshoeing.

Appendix E
Additional Resources

Accent on Information, P.O. Box 700, Bloomington, IL 61701. (309-378-2961). Database information on recreation and disabilities. Small charge for searches.

American Camping Association, 5000 State Road 67 North, Martinsville, IN 46151-7902. (317-342-8456), (fax 317-342-2065). Lists of camps that are barrier free and offer programs suitable for campers with disabilities. Request Parents Guide to Accredited Camps.

American Canoe Association, Disabled Paddlers' Committee, P.O. Box 1190, Newington, VA 22122-1190. (703-550-7495). Provides resources on adaptions for canoes and kayaks.

American Foundation for the Blind, 15 West 16th Street, New York, NY 10011. (201-862-8838).

Coleman Company, P.O. Box 11706, Wichita, KS 67201. (800-835-3278). Source of Coleman Seatback for use in canoes (approximately $10.00).

Crazy Creek Products, P.O. Box 896, Red Lodge, MT 59068. Source of Crazy Creek lightweight folding cloth seat for use in canoes (approximately $45.00).

Easy Access National Parks, National Park Foundation, 1101 17th St., NW, Suite 1102, Washington, DC 20036. Take a video tour with visitors and park rangers with disabilities to Yosemite, Olympic, Yellowstone, Rocky Mountain, Verde, Chaco, Culture, Everglades, and Shenandoah National Parks. VHS videotape $19.00 plus $3.00 postage and handling.

Easy Access to National Parks, The Sierra Club Guide for People with Disabilities, (1992), by Wendy Roth and Michael Tompane, Sierra Club, San Francisco, CA. An excellent resource reinforcing the concept access is for everyone. Book features practical information in planning safe visits to 50 national parks with 15 parks listed as "Best Visits" due to their accessibility. ($16.00).

Hardbody Fitness Systems, Inc., 22600 B-Lambert, Suite 807, El Toro, CA 92630. (714-768-8070). "Firmfist Grip" uses a series of Velcro straps to attach hand to canoe paddle (approximate cost is $40.00).

L.L. Bean, Freeport, ME 04033. Source for canoe seats.

National Camps for Blind Children, Christian Record Braille Foundation, 4444 So. 52nd Street, Lincoln, NE 68506. Request list of camps serving individuals with visual disabilities. No charge for listing.

National Foundation for Horsemanship for the Handicapped, P.O. Box 462, Malvern, PA 19355. (215-644-7414). Advisory center for program evaluation and exchange of ideas.

Rion Acoustic Instruments, Inc., 912 West 223rd St., Torrance, CA 90502. Source of hearing aid that can be used with helmets for kayaking.

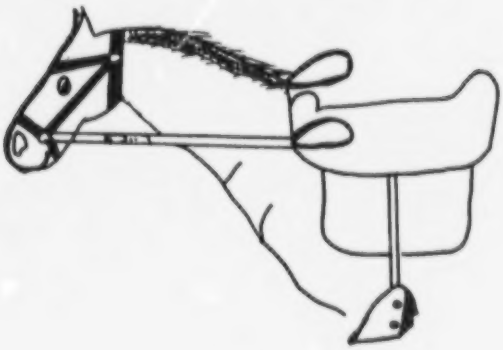
Special Recreation, Inc., International Center, 362 Koser Ave., Iowa City, IA 52246-3038. (319-337-7578). Information and referral center with special recreation access library. Directories, guides, and quarterly newsletters.

Yakima, P.O. Box 4899, Arcata, CA 95521. (707-826-8000). Source of Yakima canoe and kayak cartop carriers and foot braces for canoes and kayaks.

Appendix F
Horseback Riding Adaptions

Humes Rein
Fig. 1 - b

Humes Rein
Fig. 1 - a



Devonshire Boot
Fig. 2 - a

front view

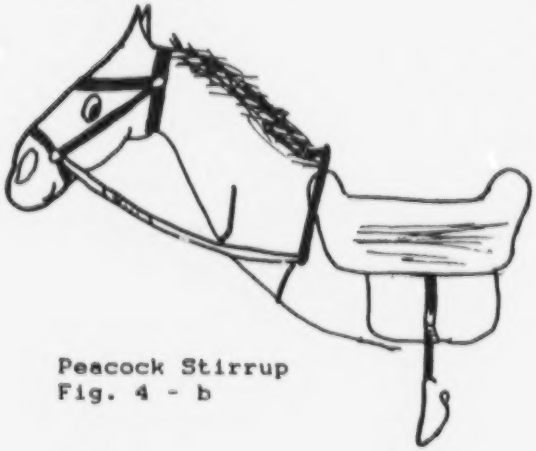
Devonshire Boot
Fig. 2 - b

Adaptive Rein
Fig. 3 - a

elastic or
rubber

Adaptive Rein
Fig. 3 -b

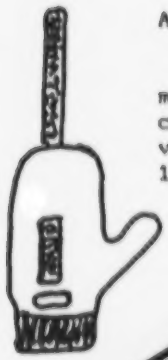
Peacock Stirrup
Fig. 3 - a



Peacock Stirrup
Fig. 4 - b

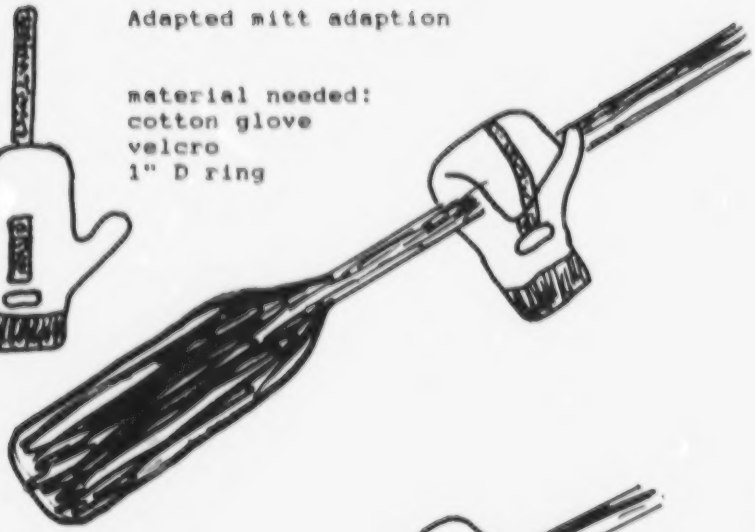
Appendix G
Small Craft Adaptions

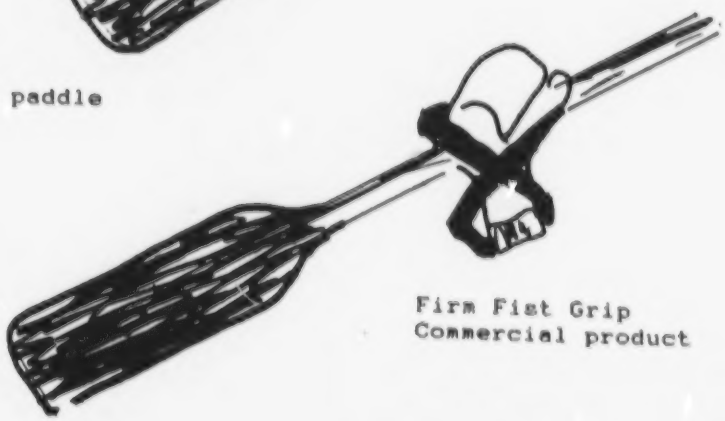
Crutchblade paddle



Adapted mitt adaption

material needed:
cotton glove
velcro
1" D ring





Firm Fist Grip
Commercial product

Bicycle Grips to double blade paddle

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Aquatic Adventure Recreation

Susan J. Grosse

> "At times we could barely maintain control of the boats so powerful and uninterrupted was the turbulent sweep of the great narrow flood. At one place as we were being hurled along at a tremendous speed we suddenly perceived immediately ahead of us and in such a position that we could not avoid dashing into it, a fearful commotion of the waters, indicating many large rocks near the surface." (Powell, 1969, p. 107)

Here is recreational activity on the edge. Here is risk, tension, fear, challenge, adventure, danger, and accomplishment. Here is a world where man or woman and nature meet head on. Here is a world many nondisabled individuals hesitate entering, yet here is also a world individuals with disabilities have been a part of for over a century. John Wesley Powell met the challenge of running the Colorado River through Grand Canyon in 1869, and Powell was an individual with a disability. In 1862 his right arm was amputated as a result of a battle wound received fighting in the Civil War (Hughes, 1967).

Throughout this article the reader will find information regarding equipment, program, service, and product resources. Some are commercial, some not. No endorsement of any resource is intended or implied by the author or publisher.

Today we remember Powell for his successful exploration of the Colorado River. He returned to battle after his amputation and fought until 1865, when he was mustered out with the rank of major. His adventurous spirit led him to explore regions of the Grand Canyon never accessed before. His friends predicted disaster and death, but he succeeded beyond his wildest dreams. We remember him not as an individual with a disability, but as a consummate adventurer.

But this article is not a biography of Powell. He is merely an example of what is possible, and how far we have yet to go in facilitating participation in aquatic adventure recreation for individuals with disabilities. While river running, sailing, underwater exploration, and wave riding attract millions of people every year, few participants are individuals with disabilities. The very factors which make aquatic adventure attractive—wilderness setting, isolation, specialized equipment, physical and mental challenges—also raise barriers for participation by an individual with a disability.

How to facilitate participation in aquatic adventure recreation is the focus of this article. Individuals with disabilities can and should have access to all areas of aquatic activity. Swimming lessons are merely an entry into a vast, exciting water world. Why and how this world can become accessible is what this article is all about.

Why Aquatic Adventure?

Why take risk? What is it about wilderness that either draws individuals to it or repels them? Many have attempted to explain why individuals with disabilities want and need aquatic adventure recreation. Wachtel (1987), in discussing wilderness canoeing, speaks of meeting and overcoming personal challenges. Saline (1985), experienced in wilderness aquatics through the Outward Bound programs, cited "a means of learning about relationships with oneself, with the physical world, and with other people" (p. 26) as a reason for accepting the challenge and the risk. People find within themselves the resources to work toward common goals.

The challenge is to the spirit as well as to the body. Lais (1988), a wilderness canoeist, believed "it does people good to get away and into completely new surroundings. Trips like these are good for the soul" (p. 19).

Schroeder (1990), referring to sailing, believed recreation is important to socialization. Sailing, as aquatic adventure recreation, is a lifelong sport whether shared leisurely with a companion or enhanced by competition. Greenstine (1983), also discussing sailing, concurred, stating that benefits exist beyond those of ordinary sport. There is the competition but there is also the camaraderie.

Each individual with a disability brings to the aquatic adventure experience a different set of attitudes, feelings, skills, knowledges, goals, fears, and backgrounds. Each leaves with different benefits. Other authors (Roswal, 1991; Wagner, 1991; Garrison, 1990) cited additional reasons for and benefits from accepting the aquatic adventure challenge, including:

- Relief from stress.
- Being able to explore new territory without reliance on more traditional physical skills (mobility hindered on land is facilitated in and on water).
- Relaxation.
- Achievement.
- Independence and self-reliance.
- Development of new skills .
- Cross training for other sports.

Probably the most important reason for an individual with a disability to want to enter the realm of aquatic adventure is because it's there!

Participant Profile

Perhaps the most important thing to know about the participant profile of individuals with disabilities who are seeking aquatic adventure is there isn't a participant profile! In surveying literature in the field, no specific prevalence was found in disability group, age, or gender. Lais (1988), in relating his experiences in wilderness canoeing in Australia, stated "none of the traditional means by which we segregate society—disability, nationality, age, experience—mattered" (p. 20). What he found most important was bonding together of individuals of mixed ages, disabilities, and nationalities as a team with the common goal of meeting the challenge of the water wilderness.

In a more formal study, Lathen (1988) found that individuals with physical disabilities have similar risk sport participation desires as society in general and want to participate in more risk sports. What influenced their choices of activities were family participation habits and previous experiences in risk adventure. In a survey of high school students with physical disabilities he found that out of the ten top participation choices for risk recreation activities, six selections were aquatic related. Rafting was the number one pick with the following additional choices:

5th place—canoeing
6th place—SCUBA
7th place—surfing
8th place—kayaking
9th place—white-water canoeing

Just as individuals from across age and interest spectrums of the general population seek risk recreation, so do individuals with disabilities. A young girl with spina bifida started rowing at age 7 while fellow rowers with cerebral palsy are age 37 and 66 (Wagner, 1991).

Cognitively disabled young adults age 12 to 24 river raft with a group of teachers (Roswal, 1991). A 64-year-old individual with post polio SCUBA dives with a 28-year-old spinal injured quadriplegic (Mellock, 1989). Factors that make aquatic adventure appealing to the general population also make it appealing to individuals with disabilities.

General Modifications Facilitate Participation

"Nature is not accessible, and I don't expect it to be" (Lais, 1988, p. 19). By the very nature of the risk in aquatic adventure, recreation in the setting is not very accessible, even to nondisabled individuals. Civilization—concrete and brick—is not the same as water wilderness and the natural terrain surrounding it. Saline (1985) believed success depended on a person's view of self and response to others; "the willingness, tenacity, and active imagination the individual brings to a task goes further in explaining her or his achievement than the physical ability it seems to demand" (p. 26).

However, when planning and carrying out aquatic adventure activities for individuals with disabilities there is a "fine line between pushing people to their limits, but not overstepping them. ... potential consequences of mistakes in a remote wilderness environment are too great" (Lais, 1987, p. 27).

While program organizers and participants can take the hard line of no modifications or assistance, this tack is rarely the case. "Even though, in some cases, nondisabled participants could more easily complete a task, everyone must have the opportunity to try and complete relatively difficult tasks" (Lais, 1987, p. 23). Modifications can facilitate completion of difficult tasks and enhance participation of individuals with disabilities in aquatic adventure activities. All participants should contribute. Where shore mobility is limited, once on water—paddling for example—a person's strength can be a real asset.

Modifications should not damage the environment. As Wachtel (1987) has stated it is desirable to remove as many physical, attitudinal, and resource barriers as possible without diminishing or destroying the excitement and challenge of a true wilderness experience. An aquatic adventure experience should be safe and should protect the environment in which it occurs.

Whether considering river running, sailing, underwater exploration, or wave riding, some general factors exist regarding preparation for and modification of activity to facilitate participation of individuals with a disability.

- Any individual, including any with a disability, should obtain medical clearance before undertaking aquatic adventure activities. Anyone considering new involvement risk recreation should check with a medical professional regarding contra-indications. This is particularly important for an individual with a disability. By the very nature of aquatic adventure they, as well as their companions, could be endangered by participation occurring against medical advice.
- An individual with a disability should participate with a nondisabled buddy. Going solo into the wilderness is rarely appropriate for anyone. For any individual with a disability, it is more than a bit foolhardy. Everyone should have a participant buddy. This might be a:
  - Sighted guide.
  - Partner canoe paddler.
  - Second kayaker.
  - More skilled role model.
  - Power boat lookout.
  - Dive companion.
  - Interpreter.
  - Friend and confidant.

  The presence of a second person in no way takes away from the abilities of the individual participant. Rather, it allows sharing and a back-up system in case of emergency. Both individuals will more than pull their own weight.
- An individual with a disability should attempt to learn from previous participation by others with similar disabilities. Aquatic adventure recreation is not new, even for individuals with disabilities (remember Major Powell). Many accessibility problems can be solved by investigating how other individuals with disabilities have solved their problems. Types of information available cover:
  - Equipment modification.
  - Equipment procurement.
  - Coping strategies.
  - Commercial and noncommercial training centers.
  - Existing aquatic adventure related sports clubs.
  - Experience logs.
  - Available participation partners.
  - Travel opportunities.

  Practical information by adventurers for adventurers is usually the most valuable. Experience is the best teacher!
- An individual with a disability should seek high quality, certified instructors. Getting a good start is important when entering any new sport activity. Where additional risk is involved, beginning instruction by a certified or otherwise well-qualified instructor is critical. Do not guess; do not self-instruct.
- An individual with a disability should be particularly careful to learn all safety procedures associated with the activity. Learn means not only reading

and talking about safety procedures but trying them out in a safe environment prior to actual entry into the adventure application environment. The first place to hang upside down in a kayak is a pool, not a fast moving river. The place to try a life jacket is a pool, not when the raft tips over.

- An individual with a disability should wear an appropriately designed and correctly fitted personal flotation device (PFD) during participation in aquatic risk adventure activities. No one can completely prepare for an emergency. Presence of a disability adds complications to any accident situation. Wearing a PFD enhances safety and improves rescue capabilities for both endangered individual and rescuer. Keep in mind:
  - PFDs must fit correctly.
  - PFDs come in a variety of designs, including high collars and crotch straps.
  - PFDs come in a variety of buoyancy capabilities.
  - PFDs should not restrict movement necessary for skilled participation.
  - Not all PFDs will automatically turn an unconscious person into a face-up position.
  - Presence of paralyzed limbs will affect body balance when a PFD is worn.
  - Need for head support and location of center of gravity may vary from the norm for individuals with different disabilities (be sure to check weight criteria of the PFD selected).
  - Inflatable PFDs (worn for SCUBA, for example) should have easily reached and used inflation systems.
  - PFDs must be U.S. Coast Guard approved. (Grosse, 1987; Bradley, 1981; Shasby, 1981).
- Accessibility to water craft can be accomplished in a variety of ways including:
  - Independent walk, butt scoot, or crawl.
  - Floating dock, ramped to shore.
  - Assisted walking.
  - Carry by another person (solo piggyback or two-person carry); while this may be convenient, it does substitute for independent access as defined by Sec.504 of the Rehabilitation Act.
  - Board craft on land, before craft is launched.
  - Gangplank transfer board (bench on shore with hinged gangplank to boat) (Schroeder, 1990, p. 35).
  - Carry individual in seat or chair in which they will ride while in the craft.
- Where particular attention to body temperature is necessary, a wet suit can be worn to help maintain body temperature and lessen possibility of skin abrasion. Foam pads (not PFDs) can be used for sitting and/or padding sensitive areas.
- Where special seating within a craft is necessary, experiment with:
  - Adjustable seat angles.
  - Adjustable back heights.
  - Optional head rests.
  - Quick release seat belts.
  - Support systems that do not anchor the individual directly to the craft itself (the person would be trapped if capsize occurred).
  - Low seating lawn or beach chairs (attempting to keep center of gravity as low as possible at all times).
- When selecting craft, be prepared to look at and try out a variety of sizes and styles. Fishing can occur from a kayak as well as from a bass boat. A speed boat as well as a pontoon boat can pull a water skier. Canoes and kayaks come in varieties of lengths, beam widths, and weights.

Tips for Specific Aquatic Adventure Activities

River running, sailing, underwater exploration, and wave riding all have specific prerequisites, equipment requirements, skills, and safety procedures. Each is also unique in the special satisfactions individuals with disabilities obtain from successful participation.

River Running

Canoe and raft are the most popular and traditional ways of river exploration. Kayaking can involve exploration or competition. Rowing, while not necessarily an exploration activity, is popular as a fitness and competition activity. Each activity has its own unique characteristics, equipment, necessary skills, and safety factors.

Rafting offers the widest range for participant abilities. Because rafting can take place anywhere from the calmest slow-moving stream to the wildest canyon river, participants can select the raft experience appropriate to their levels of interest. Participation level can vary from the trip where the individual merely sits or reclines on a large raft and a river guide does all the work, to rowing a small raft with only one other person as a rowing partner. A raft excursion can be as short as an afternoon float trip, or a lengthy multi-night experience. Large rafts can accommodate gear for overnight tripping, including hauling wheelchairs. McVeigh (1987) cited specifics for making raft tripping accessible for individuals with disabilities:

- In addition to regular tripping gear, include (depending on participant disabilities) the following:
  - Extra cushions (egg-crate foam variety).
  - Extra blankets and pillows.
  - Extra bowel and bladder care equipment.
  - Shower chair.
  - Personal splints.
  - Tire pumps, large wheelchair tires.
  - Large tent.
  - Adapted fishing gear.
  - Extra dry clothes.
- In addition to regular safety gear, include:
  - Cervical collar
  - Specialized first aid kit
  - Extra life jackets.
- When packing the raft:
  - Leave room for able-bodied participants to maneuver.
  - Attach wheelchairs at the back.
  - A small lawn chair can be fixed in the center of the raft if an individual with disability needs supported seating.
- When selecting a campsite consider:
  - Accessible landing area
  - Larger campsite area.

Whether tripping on a wilderness river or floating down a country stream on a sunny afternoon, all participants should be familiar with safety procedures. Wearing personal flotation devices, knowing what to do in case of capsize, and being comfortable in a life jacket while in water are all essential.

Canoeing has long been popular as a means of exploring areas of wilderness with limited accessibility. The variety of craft and equipment available widens possibilities for canoeing for individuals with disabilities. While it is possible to participate purely as a passenger, or duffer, in a canoe paddled by others, most individuals prefer to paddle themselves. Whether passenger or paddler, safety should be of prime concern.

To facilitate participation and ensure safety:

- Seek experienced, qualified instruction. Several programs exist offering specialized instruction for individuals with disabilities (Arthur, n.d.; Webre, 1990).
- Prior to open water paddling, practice wearing a PFD in water and capsizing a canoe. A supervised pool environment is best for this activity. Emphasis should be on the "disabled participant's adjustment to water while wearing a personal flotation device" (Cracroft, 1988, p. 34), not necessarily swimming ability.
- When selecting equipment, remember
  - Ash paddles are lighter than spruce.
  - Aluminum paddles can be cut to specific lengths, but be sure of length before cutting takes place.
  - The larger/wider the keel, the more stable the canoe; however, with a larger keel, maneuverability is slower.
  - Standard length is 17 feet; longer craft are available and will carry more gear; shorter canoes usually are broader abeam but carry less total weight.
  - aluminum, wood/canvas, and synthetic canoe structures all have advantages and disadvantages; before selection is made, consider when, how far, and by whom the canoe will have to be carried, how susceptible the craft is to damage, how careful canoeists will have to be about damage, how damage will be repaired, and cost.
- When making modifications for individuals with sensory disabilities, remember:
  - A sighted person can partner a canoe with someone with visual disability.
  - A t-grip paddle makes learning paddle face easier for individuals with visual disability (Cracroft, 1988).
  - Tapping the canoe bottom can communicate information to a canoeist with auditory disability.
  - Demonstration and practice on land and standing in shallow water can facilitate learning for individuals with sensory disability.
- When making modifications for individuals with cognitive/emotional disabilities, consider:
  - Paddling bow requires less variety of paddling technique.
  - Marking the paddle face can help paddlers remember what side of the paddle should be pushing water.
  - Marking or color coding gunwales can help paddlers remember port and starboard.
- When making modifications for individuals with physical disabilities, consider:
  - Break-away thwarts facilitate getting out in a capsize.
  - Padding gunwales, thwarts, and sharp edges on canoe bottoms lessen chances of skin abrasions.
  - Building up the grip and throat of the paddle can assist in holding and controlling the paddle.
  - Wearing a glove that has been strapped to the paddle can increase hand control.
  - A nonskid surface on the inside canoe bottom can improve stability.
  - Slatted wooden floor on the canoe bottom keeps paddler and passenger from kneeling/sitting in water.
  - Small, ground-level lawn or beach chairs can provide sitting stability.

- When canoe tripping, remember:
  - Have an emergency plan; decide who helps other people, who tries to get gear; practice ahead of time.
  - Check loading of craft prior to start of trip; at least 6 to 8 inches of freeboard is needed in each loaded canoe for safety.
  - Portages are the "single greatest challenge...to people for whom mobility itself presents difficulties, that challenge is magnified" (Goodman, 1977, p. 5); people will portage any way they can—walking, walking assisted, crawling, wheeling, carried—whatever works for each individual; if portage is completely impossible, plan a trip without a portage
- Mobility in camp varies with the individual; if crutches, cane, walker, or chair have been brought along they may—or may not—be useful in rough terrain; a heavy cushion strapped to a person's butt, gloves, knee pads, and elbow pads can make scooting on rough ground a viable option.

Kayaking is also an excellent way to explore otherwise inaccessible aquatic wilderness. Shallow draft and small size allow kayaks to go almost anywhere. Kayakers need to take the same basic precautions as canoeists in selecting quality instructional programs to begin kayaking involvement, and in practicing all safety and rescue techniques (particularly the eskimo roll) in a pool setting prior to open water excursions. Because paddlers are in close proximity to water, particular care needs to be taken to maintain body dryness and adequate body temperature. Kayaking equipment is similar, but not identical, to that used for canoeing.

To facilitate participation and ensure safety while kayaking:

- When selecting equipment consider:
  - Closed deck craft are more seaworthy.
  - Touring kayaks are larger, more stable, and can carry more gear.
  - Whitewater kayaks are smaller and less stable.
  - A kayak can be fitted with outriggers to make it more stable, particularly during learning.
  - Paddles come in a variety of lengths; try several before making final selection.
  - Wearing a wet suit helps maintain body temperature and protect against skin abrasions .
  - The body should fit snugly into the craft, but should not be so tight as to entrap the paddler if capsize occurs.
- When making modifications for individuals with sensory impairment:
  - A double kayak can provide opportunity for a kayaker with visual disability to paddle with a sighted guide.
  - Tapping on the side or bottom of the craft can be a method of communication for individuals with auditory disability paddling in a double kayak.
  - A paddle movement signal system can be used for communication with individuals with auditory disability paddling solo; keep in mind this detracts from paddling efficiency.
- When making modifications for individuals with cognitive/emotional disability:
  - Consider a double kayak, allowing paddling with a more experienced individual, at least during the initial learning phase.
  - Mark the face of each paddle blade to help in distinguishing which part of the paddle pulls water.
- When making modifications for individuals with physical disability:
  - A floating dock or beach boarding before the kayak is launched are two successfully used boarding methods.
  - If the paddler is a low level paraplegic, the foot braces can be removed and straps added inside to hold crutches (Beck, 1987).
  - Higher level paraplegics and quadriplegics need a seat that will not slide or move around in the kayak (Jacobs, 1984).
  - Any seat belts used should be quick release.
  - Ensolite foam custom cut/sized seat and hip cushions work best.
  - Lower limb amputees can have a socket attached to the kayak (do not attach the socket to the body) (Brandt, 1976).
  - Individuals with limited upper arm strength can partner in a double kayak with another paddler.
  - Build up the grip area of the paddle or attach to the paddle for individuals who have difficulty with grasp; do not tie or tape the paddle to the individual.
- When making modifications for tripping:
  - Don't pack gear in and around the feet and legs; entrapment can occur during capsize (Beck, 1987).
  - Check seating and loading in heavy water, before setting out; what looks safe in calm water can be overloaded in open, heavy seas.
  - As there isn't much room in a kayak for a wheelchair, many kayakers have found a seat pad and gloves are a handy way for an individual with mobility disability to get around a campsite.

Fishing—no discussion of river activity would be complete without some mention of fishing! While many individuals have no interest in what lives below the surface, others enjoy the thrill of the catch and/or

benefit from the food successful fishing can provide. The National Bass Fishing Championships, held annually, prove anyone can fish from practically any craft—including kayaks (McBee, 1988). Modified fishing gear for use by individuals with physical disabilities includes one-handed fishing vests, wheelchair rod holders, and electronic control reels. From kayaks to pontoon boats where wheelchairs can just roll right on board, fishing is possible. J.L. Packner, Ltd. (P.O. Box 93, Lake Zurich, IL 60047, 312-540-0118) is just one source of gear available for the fisherman with a physical disability.

Sailing

Wind at back, spray to the side, and sea gulls overhead have lured people for centuries. There is as much to feel and see while sailing as there is to do. Sailing has few barriers to accessibility for an individual with sensory disability. As most sailing is done with at least one other person, even an individual totally blind can accomplish learning to sail, if quality instruction is provided. Whatever communication system is used by an individual with auditory disability, that system works when sailing. Sailing has few barriers for an individual with cognitive or emotional disability. Quality instruction, appropriate to the functional level of the individual, results in success. No matter what the disability, instruction and practice in safety and rescue procedures are mandatory.

The greatest challenge comes to an individual with physical disability. The size and design characteristics that make sail craft unique also render them less accessible to a less mobile individual.

Common problems for sailors with physical disability include:

- How to get the craft upright after turtling.
- How to change sides of craft when tacking and coming about
- How to handle all controls/lines without moving about the craft.

Solutions to these problems have come from individuals with disabilities who have not wanted to settle for being land-bound. In most cases solutions are specific to a particular type of craft. These are not the only ways of solving problems cited, merely examples of types of creativity applied.

Challenger trimaran's three hulls are connected by a single main beam. It can be equipped with a special cushioned seat from which tiller, lines, and the single sail are all within easy reach (Wedgewood-Oppenheim, 1983).

Freedom Independence was specially constructed for disabled sailors by Tillotson-Pearson, Inc. This craft is virtually impossible to turtle. All rigging goes aft for control from the cockpit. A special cockpit seat is on travelers, allowing the skipper to move from side to side as necessary. This 12-meter boat has a hand tiller rather than rudder pedals. It has been well tried by the Council for Disabled Sailors and Shake-a-Leg Sailing (Murphy, 1986).

Hobie Cat 16 was selected over the 14-foot Hobie Cat because it could hold a sailing partner. It can be equipped with an Easy Righter and a Mast Setter. The trampoline-like bed of the catamaran allows easy seating and mobility for sailors. Wearing a wet suit and additional body padding makes for dry comfort and less skin abrasions (Axelson, 1978). Additional features can include a trapseat—aluminum frame with mesh or padded sling seat mounted outside each hull. Steered from one side only, a lift kit is available to lift the seat when flying the hull. A sailing partner is needed to run the rails (Schroeder, 1990).

Samba, a 16-foot, six passenger sailboat, can be equipped with a sail window so the skipper does not have to change position to see ahead. The stern is open for easy boarding, and the cockpit is large for easy mobility. Built in Sweden, it rides with high freeboard and has a stewing room big enough for two wheelchairs (Sjoden, 1981).

Sunbird is a single-seated, 15-foot dinghy featuring a 300-pound, weighted centerboard to prevent capsizing, a tiller-control stick in front, and sheets and bilge pumps conveniently operated from a seated position. This craft is sailed in the Canadian Mobility Cup Regatta (Mobility, 1992).

Additional equipment available includes the *Able Sailor*, a seat specially designed for changing sides in a sailboat (Murphy, 1986).

Underwater Exploration

Wilderness exploration is not limited to wilderness found above water. Venturing into the underwater world of fish, rock formations, lava flows, coral reefs, shipwrecks, and plant life is an exciting aquatic adventure. Skin diving and SCUBA diving make underwater worlds accessible to everyone.

Skin diving. Learning to use mask, fins, and snorkel is the first step in any underwater exploration program. An individual who can effectively use this equipment will have an easier time mastering later use of self-contained underwater breathing apparatus (SCUBA).

Instruction from a qualified teacher is important. While there are how-to-do-it skin diving books available, this is not recommended particularly for an individual with a disability. In selecting equipment it is important to remember:

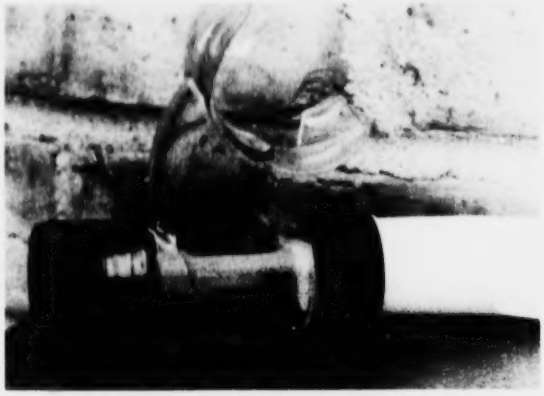
- The longer and narrower the barrel of the snorkel, the harder it will be to clear. New on the equipment market is a snorkel that does not fill with water when submerged and thus does not need clearing.
- A smooth, molded curve at the bottom of the snorkel holds its shape and is easier to clear than an accordion pleated, straight snorkel that may fold when held at the wrong angle.
- Masks come in a variety of sizes; check for proper fit before purchase; hold mask up tightly to face—do not attach strap—inhale through nose; mask should stay on face without being held.
- Divided mask strap is more comfortable and fits more securely.
- Low volume masks are easier to clear.
- Masks with shaped nose areas make equalizing ear pressure easier as nose can be pinched through the mask.
- Fins come in various widths and degrees of stiffness; stiffer, wider bladed fins require more leg strength; softer or vented fins are easier to use over long periods of time because they require less leg strength.
- Strap fins can be adjusted for foot size and easily modified for attachment to lower limb stumps; shoe fins conform to foot size and are harder to modify.

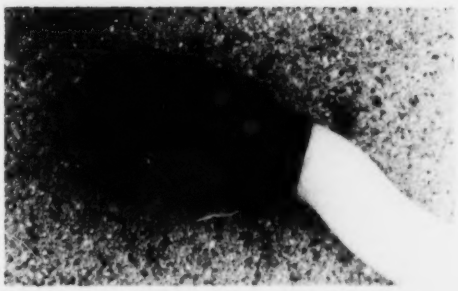
Exploration using mask, fins, and snorkel requires that an individual be proficient in breathing through the snorkel with face in water, looking through a mask covering the upper part of the face, and using fins for lower body propulsion. Some comfort in water, swimming ability, and breath control are needed before using equipment is initiated.

To facilitate participation and ensure safety:

- When organizing participation:
  - — Every participant should have an in-water buddy.
  - — Initial use of equipment should take place in shallow water or water where every participant can easily reach stable support when needed.
  - — Buddies should devise a signal system for communication with each other.

A flexible, adjustable mouth piece and specialized snorkel barrel make this dry snorkel a desirable piece of equipment for individuals with physical disability or individuals who have difficulty in forceful exhalation.





  - — Participants should learn not only how to wear and use equipment, but also how to clear snorkel and mask of water and how to put on gear in water.
  - — Participants should each have their own gear; if masks and snorkels should be shared between classes they should be cleaned with a solution of 1/3 cup chlorine bleach to a gallon of water.
- When making modifications for an individual with sensory disability:
  - — A rope tether to a swimmer with vision disability can be used to signal; be sure the rope is not so long it catches other swimmers.
  - — Masks can be obtained with prescription lenses.

  - Sometimes an individual with vision disability. finds vision enhancement occurs just through action of mask and water; experiment before ordering a special mask.
  - A person with auditory disability is not at a disadvantage under water; however, be certain all information communicated in land instruction is received and understood as safety under water is often reliant upon information learned on land.
- When making modifications for individuals with cognitive/emotional disability be sure all procedures are understood. Performing a physical skill may be fairly easy to achieve; understanding how or why is sometimes more difficult.
- When making modifications for individuals with physical disability:
  - Fins can be strapped to almost any type of lower body extremity.
  - A webbed mitt or glove enhances arm stroking; while arm use is not completely necessary, it can be of assistance if leg use is minimal.
  - The head tilt method of clearing a snorkel may be preferable for someone for whom forceful exhalation is a problem.
  - There are models of snorkels that do not require exhalation for clearing.
  - A mask with a purge valve is easier to clear for someone with shallower breathing.

SCUBA diving. Wearing self-contained underwater breathing apparatus allows the underwater adventurer access to a whole new world. The swimmer can go deeper and stay below longer than with just mask, fins, and snorkel. However, addition of air tanks adds technical and safety factors to accomplish needed skills.

Divers who are disabled are expected to pass the same tests and display the same amount of skill as able-bodied divers (Mellock, 1989). Professional Association of Diving Instructors (PADI) and/or National Association of Underwater Instructors (NAUI) schools do not differ in this requirement. Instruction includes classroom, pool, and open water diving.

Obviously instructional techniques will vary for individuals with disabilities. Once in water, persons with sensory disabilities and persons with cognitive/emotional disabilities are limited only in application of learned material. It is the diver with physical disability who may need modifications to participate in SCUBA activity.

The Handicapped SCUBA Association offers several levels of certification. With emphasis on the goal of safe diving, not necessarily how that goal is achieved, they have been providing dive certification programs since 1986. Individuals with any disability can take part; certification is available for all levels of performance (Carroll, 1987). Once certified by the Association the disabled diver must dive with an able-bodied certified diver.

Specific modifications that may facilitate participation by a diver with physical disability include:

- Wearing a wet suit to conserve body heat as well as protect against skin abrasions.
- Using a buoyancy compensator that requires a minimum of manipulation and hand strength (Carroll, 1987). A stabilizing jacket with soft touch inflator mechanisms seems to be preferred.
- Experimenting with placement of weights. Buoyancy characteristics differ between atrophied limbs and normal limbs. Weights must balance the diver and can be worn on waist, knee, or in small amount directly on or in the buoyancy compensator (Carroll, 1987).
- Attaching fins directly to a water-proof prosthesis.
- Rearranging placement of underwater gauges to make them easier to read and leave hands free for swimming.
- Using webbed mitts when arm propulsion is necessary to compensate for lack of leg propulsion (Mellock, 1989).

When ready for an overnight dive trip consider live-aboard arrangements (Hickey, 1992); an experienced diver who happens to have physical disability found living aboard the diving ship easier and preferable to coming back to land.

Only two criteria apply to any modification tried. First, it should be safe. Second, it should be easy to use (Carroll, 1987). Enhancing access to the underwater world is the main goal. For individuals with disabilities, creativity in equipment makes this possible.

Wave riding

Speed, power, the feel of wind and spray, and control right on the edge make water skiing and surfing desirable for some individuals with disabilities seeking aquatic adventure. Any person wanting to water ski or surf should have swim skills and be comfortable in deep water. A personal flotation device should be worn at all times. The individual should be comfortable and mobile in the PFD in deep water.

To facilitate participation and ensure safety for individuals with disabilities while water skiing:

- Have an in-water buddy who can facilitate a steady start by helping stabilize the individual before the go signal is given. Be sure the buddy is behind so as not to be hit as the skier takes off.
- Have a third person in the boat. One person drives; one watches the skier and then watches for traffic once the skier is down; the third person enters the water to assist the down skier retrieve equipment and get back onto skis or into the boat. Kagel (1989) recommended two boats. Boat one performs the usual functions. Boat two carries the jump person and goes to the skier as soon as a fall occurs. This system is quicker as boat two can run directly parallel to a skier and be there almost immediately.
- The boat driver should be familiar with specific abilities and needs of the participant. Additional training may be necessary (Water Craft Currents, 1982).
- Skiers must remember to get a ski up and vertical as soon as they fall. Skiers with disabilities may be less able to make themselves known to other traffic on the water.
- When circling a downed skier boat drivers should circle close enough to bring the tow line directly over the skier for easy access. A skier who is disabled may not be able to find or retrieve a lost tow rope.
- A tow rope that can be quickly released from a boat is useful for skiers who may have difficulty releasing or remembering to release the tow bar when falling.
- When making modifications for individuals with sensory disability:
  - A whistle can substitute for visual signals.
  - Give any side obstacles wide berth; skier with visual disability may not be able to judge when to leave or cross the wake based on seen obstacles.
  - A flag signal system on board the boat can substitute for verbal directions for a skier with auditory disability.

The KAN SKI makes water skiing possible for individuals with physical disability. *Photo courtesy of Magic in Motion.*

- When making modifications for individuals with cognitive/emotional disability be sure the signal system is clearly understood before skiing.
- When making modifications for individuals with physical disability, several possibilities are:
  - An individual with single limb amputation can ride a slalom ski or use just one arm on the tow bar.
  - An individual with no use of lower extremities has several choices of modified equipment. The KAN-SKI (Kegel, 1989) is a single, wider ski with a seat. The tow rope can go to a held tow bar or a tow attachment on the ski. Quick release mechanism detaches it from the ski if a fall occurs. The AQUA BAT (Karman, 1978) has parallel skis joined by metal tubing and a seat. Steering is accomplished by tilting the seat. Water Craft Currents (1982) described a pair of skis with built in bucket seat, handle bars, felt bindings, and foam flotation.

Surfing has been modified for individuals with physical disabilities through development of the bellyboard (sometimes called boogie board). Bond (1975) reported using a grooved board with Velcro straps adaptable for use by someone with upper arm amputation. Handle-like devices can be attached for steering and righting. He cautioned, however, that both a pool and surf checkout should occur (including tipping and recovery techniques) before independent surfing takes place.

Competition

Any of the aquatic adventure activities can take competitive form. Whitewater kayak and/or canoe racing, yacht racing, and water ski competition are a few examples. However, two additional aquatic activities are more competitive than leisure in nature. One is triathlon, the other rowing (sculls).

Triathlon

A combination of swimming, cycling, and road racing, triathlon places great demands on the physiology of the competitor. Expertise is needed in not one but three activities. Individuals with disabilities are just entering the world of the triathlon. Mastery of each individual sport is, of course, necessary. Competition can be equalized by not penalizing athletes for transition time between sports (Glenn, 1988).

With transition time not a factor in final time, the athletes with disabilities just compete the same way they would for any other competition in that particular sport.

Rowing

More than 33 adapted rowing clubs are cited by Wagner (1991). Opportunities to participate in established programs have existed for many years. Rowing in light-weight, stable, easily propelled sculls is made possible through several different types of modifications:

- Pontoons can be added on either side to increase stability (Wagner, 1991; Shasby, 1981). Wagner illustrated how oarmaster components attach oars to sculls and out over pontoons.
- Ace bandages can be used to anchor hands to oars (Greenstine, 1983), as can gloves anchored to the oars (Shasby, 1981).
- For individuals with hand and/or wrist weaknesses, oars can be anchored in oar locks rather than left loose.
- Sliding seats can be replaced with stationary seats with seat belts added for increased stability.
- Boarding can be done before the scull is launched. Astro turf on the launch area (preferred to a dock) protects craft bottom.
- Two-man sculls may be preferable for individuals with vision disabilities or who tire easily.

For Further Information

This is neither an all-inclusive listing of aquatic adventure recreation sources nor an endorsement by the author of any service provider. As more individuals with disabilities enter aquatic adventure activities, more resources will become available. When contacting a source, be specific in your request; often if those contacted cannot accommodate you, they can refer you to someone who can. Include:

Personal information. Besides name and return address, information on the exact nature of the disability and specific capabilities of the individual are useful in program referral. If assistance is needed, what type of assistance and under what conditions?

Activity preference. If rafting or SCUBA are areas of specific interest, indicate so. If looking for aquatic adventure with no particular preference, indicate that.

Availability of training/level of participation. Is this to be an activity where participants need no training and all skills are handled for them? Is training necessary: Must training occur before participation? Who provides basic training? What level of training should participants have? Opportunities exist for new aquatic adventurers as well as experienced participants.

Cost. What costs are involved—equipment, transportation, food, training, guide service, clothing, lodging, permits? What are participants expected to provide? What is provided at extra cost? What are optional add-ons?

Availability of able companions. Must individuals provide their own companions, or is a partner-matching service provided.

American Canoe Association, 7432 Alban Station Boulevard, Suite B-226, Springfield, VA 22150, 703-451-0141.

American Water Ski Association, Disabled Ski Committee, Camp ASCCA, P.O. Box 21, Jackson Gap, AL 36861, 205-825-9226.

Breckenridge Outdoor Education Center, P.O. Box 697, Breckenridge, CO 80424

Challenge Alaska, P.O. Box 110065, Anchorage, AK 99511

Council for Disabled Sailors, 60 Padanaram Rd. #16, Danbury, CT 06811

Courageous Sailing Center, Charlestown Navy Yard, Boston, MA 02205

C.W. HOG, Idaho State University, Box 8118, Pocatello, ID 83209

Environmental Traveling Companions, Fort Mason Center Room 360, Bldg. C, San Francisco, CA 94123

Handicapped SCUBA Association, 116 West El Portal, Suite 104, San Clemente, CA 92672

KAN SKI, Magic in Motion, 315 19th Street, NW, Puyallup, WA 98371

Mission Bay Aquatic Center, 1001 Santa Clara Point, San Diego, CA 92109

Moray Wheels, Adaptive SCUBA Association, P.O. Box 1660 GMF, Boston, MA 02205

Nantahala Outdoor Center, Star Route Box 68, Bryson City, NC 28713

National Ocean Access Project, P.O. Box 33141 Farragut Station, Washington, DC 20033-0141

North Country Regional Sports for Health, Outdoor Program Center, Hobson State University, Bemidji, MN 56601

POINT, 3200 Mustang Drive, Grapevine, TX 76051

Shake-a-Leg, P.O. Box 1002, New Port, RI 02840, 401-849-8898; or 1500 Northwest Twelfth Avenue, #1814, Miami, FL 33136, 305-545-5620

Special Olympics, 1350 New York Avenue, NW, Washington, DC 20005

S'PLORE, 600 East South Temple, Salt Lake City, UT 84102

Summer Splash, Harborview Medical Center, Recreation Therapy Department, 325 Ninth Avenue, Seattle, WA 98188

U.S. Association of Disabled Sailors, Southern California Chapter, P.O. Box 15245, Newport Beach, CA 92659, 714-534-5717

U.S. Rowing Association, Adaptive Rowing Committee, 11 Hall Place, Exeter, NH 03833, 603-778-0315

U.S. Yacht Racing Union, P.O. Box 209, Goat Island, Newport, RI 02840

Voyageur Outward Bound School, Box 250, Long Lake, MN 55356, 1-800-328-2943

Wilderness Inquiry, 1313 5th Street SE, Suite 327, Minneapolis, MN 55414

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Adventure Recreation Directory

Susan J. Gavron

The outdoors is a vast and often challenging environment for any person. For those with disabilities, access to the outdoors has often been limited. However, during the past 10 to 15 years access has increased due to several factors: legislation, architectural changes, and changes in attitude—attitudes of individuals with disabilities as well as attitudes of the general public.

Legislation, in the form of laws about inclusion, employment, and accessibility, has allowed individuals to explore opportunities they once only dreamed about. Individuals with developmental disabilities have rafted the mighty New River in Virginia, while others who are blind or spinal cord injured have climbed some of the most challenging peaks in North America. Changes in accessibility have afforded means to experience many new opportunities in previously inaccessible places. Changes in attitudes have resulted in individuals with disabilities becoming more aware and more highly educated. They are demanding their rightful participation in the workplace and in the leisure world. The general public is also more aware of needs and capabilities of individuals with disabilities and is responding to meet these needs.

There remain many barriers to leisure participation by individuals with disabilities, although there is definitely an increase in visibility and accomplishments in this arena. Adventure recreation in the out-of-doors is fast becoming a part of the lifestyles of individuals with disabilities.

Adventure recreation means different things to different people. For some individuals simply getting into a row boat on a quiet pond can be an adventure. Others will seek the thrill of skiing down a mountainside, crawling through a cave, or flying through the skies. Still others will want to travel by van, boat, foot, or bicycle to out-of-the-way places. Whether an individual with a disability travels alone or with a companion, to the backwoods or cities, by whatever means, the leisure world with its adventure recreation is available today more than ever before.

This directory is meant to provide a small sampling of activities and experiences available to individuals with disabilities. It is divided into several sections: Activities, Camping Directories, and Travel and Tourism Services. No endorsement of any service or company listed is intended by the author, the American Alliance for Health, Physical Education, Recreation and Dance, or its subsidiary groups. Readers must still carefully consider any planned experience, seeking out specific information relative to their own individual needs. There are many local, state, regional, national, and international options for adventure recreation. Seeking them out can be the most important step in having adventure recreation experiences.

Activities

Canoeing

American Canoe Association, 7432 Alban Station Boulevard, Suite B-226, Springfield, VA 22150, 703-451-0141.

Cycling

American Youth Hostels, P.O. Box 37613, Washington, DC 20013-7613

Special Olympics International Sports, Director of Cycling, 237 Alpine Avenue, Boulder, CO 80302

United States Association of Blind Athletes, Director for Tandem Cycling, Bill Young, 2878 Copley Avenue, San Diego, CA 92116

Fishing & Hunting

Capable Partners, Inc., 7320 Oxford Street, St. Louis Park, MN 55426

Physically Challenged Outdoorsman's Association, 3006 Louisiana Avenue, Cleveland, OH 44109

Flying

American Wheelchair Pilots Association, c/o Dave Graham, 1621 East Second Avenue, Mesa, AZ 85204

Freedom's Wings International, 1832 Lake Avenue, Scotch Plains, NJ 07076

International Wheelchair Aviators, 1117 Rising Hill, Escondido, CA 92029

Soaring Society of America, P.O. Box 66021, Los Angeles, CA 90066

Horsebackriding

North American Riding for the Handicapped Association, Bill Scebbi, Executive Director, Box 33150, Denver, CO 80233

Special Olympics International, Mary Lu Bonte, Director of Equestrian, 1350 New York Avenue, NW, Suite 500, Washington, DC 20005

Ice Sports

Alberta Sledge Hockey and Ice Picking Association, 20 Horner Court NE, Medicine Hat, Alberta, Canada T1C 1M1

Skating Association for the Blind and Handicapped, c/o Sibley's Boulevard Mall Store, Niagara Falls Blvd., Amherst, NY 14226

Martial Arts

Casa Colina Centers for Rehabilitation, Self Defense Instructor, Pomona, CA 91768

Challenge Karate Club, Bruce Velle, Project Administrator, 7041 Eton Avenue, Conoga Park, CA 91303

USABA Sports Director for Judo, Linda Gibson, 18256 Keswisk, Resada, CA 91335

Road Racing

Achilles Track Club, 9 East 89 Street, York, NY 10128

International Wheelchair Road Racers Club, 30 Mayano Lane, Stamford, CT 06902

Sailing

American Wheelchair Sailing Association and Sailing for Freedom Foundation, 512 Thirtieth Street, Newport Beach, CA 92663

Council for Disabled Sailors, 60 Padanaram Rd. #16, Danbury, CT 06811

Courageous Sailing Center, Charlestown Navy Yard, Boston, MA 02205

Freedom on the River, c/o Kevin Elya, 37706 Jaminson, Livonia, MI 48141

Shake-a-Leg, P.O. Box 1002, New Port, RI 02840, 401-849-8898; or 1500 Northwest Twelfth Avenue, #1814, Miami, FL 33136

U.S. Association of Disabled Sailors, Southern California Chapter, P.O. Box 15245, Newport Beach, CA 92659

U.S. Yacht Racing Union, P.O. Box 209, Goat Island, Newport, RI 02840

United States Yacht Racing Union Committee on Disabled Sailors and United States Association of Disabled Sailors and National Ocean Access Project, P.O. Box 33141, Farragut Station, Washington, DC 20033

SCUBA Diving

Handicapped SCUBA Association, 1104 El Prado, San Clemente, CA 92672

Moray Wheels Adaptive SCUBA Association, P.O. Box 1660, General Mall Facility, Boston, MA 02205

Skiing

Canadian Association for Disabled Skiing, Box 307, Kimberly, British Columbia, Canada V1A 2S9

National Handicapped Sports and Recreation, 1145 19th Street NW, Suite 717, Washington, DC 20036

Ski for Light (visually impaired), 1455 West Lake Street, Minneapolis, MN 55408

Special Olympics International, 1350 New York Avenue NW, Suite 500, Washington, DC 20005

Three Track Ski, Box 1260, Station Q, Toronto, Canada, M4T 2P4

USABA Alpine Skiing Committee, Chris Montgomery, Chair, 640 West Addison Street, Chicago, IL 60613

Water Skiing

American Water Ski Association, Disabled Ski Committee, Camp ASCCA, P.O. Box 21, Jackson Gap, AL 36861

British Disabled Water Ski Association, 18 Grenville Park Avenue, Ashtead, Surrey, England, KT21 2QS

Cypress Gardens, P.O. Box 1, Cyprus, FL 33880 (instruction available)

KAN SKI, Magic in Motion, 315 19th Street, NW, Puyallup, WA 98371

Mission Bay Aquatic Center, 1001 Santa Clara Point, San Diego, CA 92109 (variety of instruction in water sports offered)

Summer Splash, Harborview Medical Center, Recreation Therapy Department, 325 Ninth Avenue, Seattle, WA 98188

Wilderness Experiences

Most of the resources listed in this section provide experiences in multiple areas of outdoor adventure activity.

All Outdoors Inc., P.O. Box 1100, Redmond, OR 97756

Alternate Mobility Adventure Seekers, Boise State University, Physical Education Department, 1910 University Drive, Boise, ID 83725

Bay Area Outreach and Recreation Programs Inc., 605 Eshlamas Hall, Berkeley, CA 94720

Breckenridge Outdoor Education Center, P.O. Box 697, Breckenridge, CO 80424

Camp ASCCA, P.O. Box 21, Jackson Gap, AL 36861

Challenge Alaska, P.O. Box 110065, Anchorage, AK 99511-0065

Courage Center, 3915 Golden Valley Road, Golden Valley, MN 55422

Colorado Outdoor Education for the Handicapped, P.O. Box 697, Breckenridge, CO 80424

Cooperative Wilderness Handicapped Outdoor Group (C.W. HOG), P.O. Box 8118, Pocatello, ID 83209

Durango/Purgatory Handicapped Sports Association, P.O. Box 1884, Durango, CO 81302

Environmental Traveling Companions, Fort Mason Center, Landmark Building C, San Francisco, CA 94123

Minnesota Outward Bound School, P.O. Box 250, Long Lake, MN 55356

Nantahala Outdoor Center, 41 Highway 19 West, Bryson City, NC 28713

North Country Regional Sports for Health, Outdoor Program Center, Hobson State University, Bemidji, MN 56601

Paraplegics on Independent Nature Trips, 4101 Cummings, Bedford, TX 76021

Recreation Unlimited, 3131 Chenden Blvd., Boise, ID 83714

Roland and Associates, P.O. Box 332, Handook, NH 03449

Shared Outdoor Adventure Recreation, P.O. Box 14583, Portland, OR 97214

Skiforall Foundation, 4105 W. Madison, Suite 3, Seattle, WA 98112-3231

Special Populations Learning Outdoor Recreation and Education (S'PLORE), 699 E. South Temple, Suite 120, Salt Lake City, UT 84102

Vineland National Center, P.O. Box 308, Loretto, MN 55357

Voyageur Outward Bound, 10900 Cedar Lake Road, Minnetonka, MN 55343

Wilderness Inquiry II, 1313 Fifth Street SE, Suite 327, Minneapolis, MN 55414

Camping Directories

Access National Parks: A Guide for Handicapped Visitors (book stock #024-005-00691-5, video also available) Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402

American Camping Association, Bradford Woods, St. Route 67, Martinsville, IN 46151

Campfinder, Publications Department, United Community Planning Corporation, 87 Kilby Street, Boston, MA 02109

Camps for Children with Disabilities, National Easter Seal Society, 2023 West Ogdon Avenue, Chicago, IL 60612

Federation for Children with Special Needs, 312 Stuart St. Second Floor, Boston, MA 02116

National Camps for Blind Children, Christian Record Braille Foundation, Inc., 4444 South 52nd Street, Lincoln, NE 68506

Travel and Tourism Services

Cruises

American Hawaii Cruises, 350 Kearny Street, San Francisco, CA 94108

Carnivale Cruise Lines, 5225 NW 87st Avenue, Miami, FL 33166

Cunard Line (QEII), Public Relations Assistant, 555 Fifth Avenue, New York, NY 10017

Services

Adventure Travel Service, 28 W. Adams Avenue, Detroit, MI 48226 (individual trip planning)

D.C. Tours, 1202 Gatewood Drive, Alexandria, VA 22307 (Washington, DC, Pennsylvania, and Virginia areas)

Environmental Traveling Companions, Fort Mason Center Room 360, Bldg. C, San Francisco, CA 94123

Mobility International U.S.A., P.O. Box 3551, Eugene, OR 97403

Other Resources

International Directory of Access Guides, Rehabilitation International U.S.A., 1123 Broadway, Suite 704, New York, NY 10010

American Automobile Association Tourbook Series, American Automobile Association, 8111 Gatehouse Road, Falls Church, VA 22047 (or local AAA office)

Also, consult each state's Travel and Tourism Office and Department of Natural Resources for listings of accessible parks. Hotel chains can provide information on their accessible accommodations. Bed and Breakfast directories often include information on accessible facilities.

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Outdoor and Adventure Programs:
Complementing Individual Education Programs and Treatment Plan Objectives

Gary M. Robb, Editor

Outdoor education, recreation, and camping activities are generally highly reinforcing and enjoyable for participants with disabilities. In an age of accountability, however, such activities must be more if parents, administrators, and other staff members are to sanction and support them. Such activities must be viewed as complementary, sometimes necessary, to full realization of treatment or education plan objectives. Planning, conducting, and documenting outdoor and adventure programming must reflect educational and/or rehabilitation potentials of the outdoor medium as well as its potential for enjoyable leisure experiences.

The descriptions of model programs that follow provide examples of this and reflect the variety of outdoor activities and applications employed by teachers and other personnel involved in the programs and projects for individuals with disabilities. Activities, applications, and resources provide the reader with some sense of the myriad ways the outdoor medium can positively impact both participants and leaders in making educational and rehabilitation processes more enjoyable and more fun.

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Activities and Experiences

Initiative Tasks

Examples of group problem initiative tasks* are:

All Aboard. Have group members reach the top of or get up onto a boulder, all at the same time!

Jungle Co-op Meal. Hide components of a meal or snack in various areas; divide the group to search for specific objects, e.g., breakfast items such as cereal, eggs, silverware and utensils, milk and juice. Emphasize the importance of each group accomplishing its task if the meal or snack is to be successful.

Reach for the Sky. Give each group a piece of chalk or tape. Members of each group stand on each other's shoulders and make marks as high as possible on a wall or smooth tree trunk; tapes can be numbered if groups are to be competitive.

Round the Clock. Have members of the group form a large circle, firmly join hands, and then rotate

*Some of the initiatives have been taken and/or adapted from Project Adventure, Hamilton, MA (Karl Rohnke, *Cowstails and Cobras*).

360 degrees until back to starting positions. The goal is to see how quickly the group can complete the problem. Each attempt is timed; time is stopped if anyone breaks grip. Group cooperation is obviously essential. A good time for a 30 to 35 member group is any time below 30 seconds. Place markers at three, six, nine, and twelve o'clock to provide reference points for starting and finishing.

Planning and evaluating tasks are important so leaders can determine, for example, how leadership emerges, extent of synergy—group effort surpassing individual potentials, and extent to which goals such as better group decision-making, improved leadership skills, increased confidence, heightened support of others, and more appropriate demonstration of emotions have been achieved.

Adventure Activities—Ropes Course

Laurie Backus, St. Louis Association for Retarded Citizens

Emotional highs and successes through cooperation can be attained on adventure ropes courses. The following ropes initiative course is used with campers in the St. Louis (Missouri) Association for Retarded Citizens residential camp program. Moderately to severely mentally retarded campers of all ages participate in the course following warm-up activities and group games. Representative of group cooperative adventure activities are the following.

Spool. One large wooden cable spool is suspended on an iron pole five and one-half feet above the ground.
Object: Get entire group to the other side of the spool.
Benefits: Group solidarity; problem solving; spotting skills.

Electric Fence. Small rope is strung four feet high between two trees.
Object: Get entire group over the fence without touching it.
Benefits: Teamwork; problem solving; balance; group solidarity.

Tire. Position tire three feet high between two trees.
Object: Get entire group through the center of the tire without touching its sides.
Benefits: Teamwork; problem solving; group solidarity.

Slack Wire.
Object: Use ropes with tension and walk across the cable.
Benefits: Law of tension; spotting; independence.

Postman's Walk.
Object: Walk up inclined beam with or without the rope, hook into self-belay, side step to the other side, then climb down the rope ladder after unhooking from the belay.
Benefits: Balance; fine motor coordination; courage; trusting rope belay; spotting; climbing down the rope ladder.

Tire Swing.
Object: Climb onto tree, reach for tire, swing from one tire to other, and then swing down.
Benefits: Courage; strength; eye-hand coordination; spotting; and timing.

Wall.
Object: Get entire group from one side of wall to other.
Benefits: Courage; strength; eye-hand coordination; spotting; timing.

Stationary Low Beam.
Object: Walk across beam without losing balance.
Benefits: Balance; courage; independence.

Spider's Web. String one cargo net like a web among seven trees.
Object: Walk across or crawl across the spider's web.
Benefits: Eye-hand coordination; balance; courage; independence.

Burma Bridge.
Object: Walk across and jump off bridge onto hay pile.
Benefits: Balance; strength; courage; independence; trusting the spotting rope.

Fidget Ladder.
Object: Crawl, creep, or walk across the bars to the other side of the ladder.
Benefits: Arm and shoulder strength; balance; courage.

Kitten Crawl.
Object: Pull across two ropes.
Benefits: Arm and shoulder strength; balance; reflexes; agility; courage; and spotting.

Commando Crawl.
Object: Crawl up rope ladder, swing onto another rope, slide down to bottom.
Benefits: Coordination; courage; strength; balance.

Acclimatization, Sensory Awareness, and Orienteering Activities

Expanded use of the senses in discovering the out-of-doors does not emphasize learning names of things but rather upon experiencing them. Activities in which such objectives can be attained include the following.

Swamp Walk. Plot a navel-deep walk in a wetland emphasizing the unique smell and feel of the place. Wear old sneakers and life jackets to add safety to this exercise in sensory stimulation.

Adapted Orienteering. Examples of adapted activities that can be experienced are as follows. Distinguish trail from forest. Follow trail of rope. Follow trail of familiar items, e.g., balls, trail markers, painted rocks. Follow color coded trail markers—red, straight ahead; white, right; blue, left. Navigate using sun or stars Use map and compass

Sensory Scavenger Hunt. Find, for example, something which smells like teaberry gum; something smooth; something that goes "crack" when it is broken; something red.

Applications as Treatment Plan and IEP Medium

Jeff Wittman, coordinator, and Mark Havens, graduate research assistant, Project TORCH (Training in Outdoor Education, Recreation and Camping for Personnel Working with Severely Handicappd Children), supported by Camp Allen, Bedford, New Hampshire and Indiana University's Outdoor Center, Bradford Woods, Martinsville, Indiana

A key to institutionalizing outdoor programming in a particular setting can be formal inclusion as a medium through which specific educational and/or treatment objectives can be realized. The following specific examples from Project TORCH curriculum instructional guides suggest ways of accomplishing this.

Motor Skills

Sample Objective: Matches through tactile clues.
Activity: Which Is Which.
Format: Places various natural objects in a box for matching through tactile clues—big or small; wet or dry; straight or curved; hard or soft; smooth or rough; flat or thick; wide or skinny. Matching can be accomplished with two similar objects in the box or the model outside the box and the match inside the box.

Follows up with a walk through the woods to identify clues in natural surroundings.

Other Examples

Fine motor skills through nature crafts.
Gross motor skills through natural obstacle courses.
Tracking skills through observation activities.
Fitness development through ropes courses and outdoor recreation activities, e.g., jogging, cross-country skiing, backpacking.
Sensory awareness through exposure to novel sights, sounds, feels.

Learning Skills

Sample Objective: Sorts by color.
Activity: Camouflage.
Format: Scatter various color toothpicks around a natural area. Give students five to ten minutes to find as many toothpicks as possible; sort findings by color. If appropriate, discuss reasons more of one color than another were found and develop the idea of adaptation—special features of an organism that allow it to survive.

Other Examples

Memory skills through recall processing of activities.
Concept development through Indian lore activities, e.g., the Indians knew that only some things float—let's test some of the things here by the stream.
Reasoning skills through classification activities, e.g., sort collected twigs by size.

Communication Skills

Sample Objective: Identifies objects when given their names.
Activity: Object Run.
Format: Have students form a line facing you. Give each student a natural object—e.g., rock, leaf—with two or three students having the same object. Call out a specific item; students holding called item race to caller. Exchange items after a few rounds.

Other Examples

Carries out commands by following recipe instructions during outdoor cookery.
Creative expression through haika or cinquains.
Vocabulary development with unique camp words, e.g., kp, tent, teepee.

Social Skills

Sample Objective: Share objects.
Activity: Sharing Hikes.
Format: On a hike, leader picks up interesting objects, e.g., wintergreen, and asks group to pass it back after smelling/touching/inspecting it. Leader reinforces passing behaviors.

Other Examples

Cooperation through group participation, e.g., initiative problems, chores, cooking.
Assuming responsibility for self and others through group leadership.
Turn-taking in group activities.
Befriending non-handicapped peers in buddy-camping program.

Independent Living Skills

Sample Objective: Dress appropriately for weather conditions.
Activity: Dresses for the Weather.
Format: At the beginning of each day of campout or resident camp experience, students are asked to choose clothes appropriate to weather conditions.

Other Examples

Practices ADL (activities of daily living) skills.
Domestic maintenance skills through chores and cleanup.
Community living skills through preparation of simple meals.

Adventure Education as a Mainstreaming Technique

Chris Roland, project trainee and doctoral student at Boston University, and head teacher for the Derry New Hampshire TRAILS (Teaching Retarded Adolescents Independent Living Skills) program

In Derry, New Hampshire, staff of Project TRAILS, based at Grinnell Elementary School, recognized the importance of challenging movement programs—programs that got away from traditional ball bouncing curricula. The staff attended training sessions in adventure education and created a program that was designed to:

- Meet physical needs of each student.
- Provide new and challenging activities.
- Allow students opportunities for decision-making.
- Provide teachers and students opportunities to develop or enhance interpersonal relationships.

The TRAILS adventure program staff designed a series of sequential activities to meet the stated goals. Included in this series were New Games, where each student took part in:

- The entire game instead of being excluded after a few minutes.
- Trust exercises.
- Initiative problems where small or large groups work together and help one another solve particular problems.

The last component was the school's indoor ropes course where students were given opportunities to try extremely challenging activities. One such activity was climbing a ladder to a twenty-foot tow-line bridge where the student walked across on one wire while holding the other wire. All of these activities

were conducted in both self-contained and mainstreamed fifth and sixth grade settings.

While evaluating the program it was readily apparent that stated goals were definitely being met. However, a most important result which staff did not expect was that attitudes of fifth and sixth graders began to show positive changes throughout the different activities. For example:

- During New Games all students played cooperatively, with one student remarking, "They're like us—they're fun to play with!"
- During an initiative problem, children again worked cooperatively, and some retarded students were guided by their peers. Helping and guiding are crucial to differentiate.
- During ropes course sessions, many fifth and sixth graders were quite impressed with retarded students' abilities to try new and often scary things. One girl quietly said, "Tina went right up there (to the tow line bridge) and wasn't scared—but I sure was!"

Adventure education as a mainstream technique appears to have validity and a tremendous future. Attitudinal scales for this type of program have to be developed along with implementation of additional adventure programs having more specific evaluation designs. One such program was conducted in West Poland, Maine.

Agassiz Village, 145 miles from Boston, Massachusetts, is a 650-acre winterized camp. The summer program begins in late June and is divided into four two-week sessions that average 300 children each; 6% of these children possess handicapping conditions. The program design for the adventure session included two groups each composed of five physically disabled and five able-bodied children; each group met once per day for two to three hours during a two week period. During this time, each group participated in similar activities and in a similar sequence as in Derry.

The Maine ropes course is more extensive, including a 200 foot zip line on which campers ride down by means of a pulley. The zip line, actually a three-eighths inch wide rope, begins at a platform twenty feet high, slants downwards, and is attached to another tree.

To test for attitudinal changes, pre- and post-interviews were conducted with each camper. The question that able-bodied children answered with most changes was, "What can disabled children do that you can do?"

One ten year old girl responded, "Don't know—no idea—don't care...." After the two-week program she responded, "Many things—I'm surprised!" One boy first said, "A few things, like camping," and after the program said, "Wow—lots—when Andrea went down the zip line, it was amazing!" There was the girl who at first confusingly said, "Don't really know—parts of their bodies can't move," only to say two weeks later, "They can do as much as anyone else!"

What seemed to be a short period of time in the Maine woods turned out to be a most interesting and rewarding period of time for both disabled and able-bodied children.

The Derry and Agassiz Village programs cannot be fairly compared. Yet it can be concluded that both programs appeared to have positive effects on non-handicapped children. In this day of emphasis upon mainstreaming, we must seriously look at these successes and continue to replicate and document them.

Xavier School District Adventure Program

Program Purpose

Provide a variety of adventure activities to enable acquisition and application of skills, knowledges, and attitudes to complement individual education programs of students in Xavier School District special education programs.

Program Goals

- Improve motor skills.
- Improve activities of daily living skills (brushing teeth, washing, etc.).
- Improve communication skills.
- Improve social and interaction skills.
- Improve reasoning and functional academic skills.
- Improve parent effectiveness.
- Increase interaction with nondisabled peers.
- Increase avocational interests and skills.

Program Components

1. Participates weekly in an adventure course and other activities at the school's outdoor center.

Individual Objectives	*Activities*
Rolls independently	Reduces gradually the prompts on rolling portions of the course.
Improves balance.	Catches an object while walking forward (backward, sideward) on a natural balance beam.
Improves strength.	Performs horizontal and vertical climbing tasks on the course.
Increases endurance.	Jogs at the outdoor center.

2. Participates for eight weeks in outdoor cookery and campcraft in the nearby state park's picnic area.

Individual Objectives	*Activities*
Plans a menu.	Plans own dutch-over treat.
Follows a simple recipe.	Follows recipe for S'mores at campfire.
Pours from pitcher to cup.	Practices during meals plus Water Pour Relay to douse fire.
Returns all equipment and items used to their storage places.	Returns utensils and cooking equipment to campout box.

3. Participates for eight weeks in the fall in Adopt-A-Tree and Acclimitization activities in the city park.

Individual Objectives	*Activities*
Discriminates sounds.	Identifies sounds at park and constructs a sounds map of the area.
Identifies an object verbally.	Describes adopted tree to others.
Precedes sounds with adjectives.	Participates in sensory description exercise, e.g., big, green, slimey, rock.
Carries out two simple related commands.	Touches and tastes natural objects on command.

4. Participates in weekly group initiative tasks in the school gymnasium, on the playground, and in wooded areas.

Individual Objectives	*Activities*
Helps others.	Leads other student in Blind Trust Walk.
Participates with others.	Participates in Stump Stand.
Leads group in activity.	Participates in animal walk follow the leader.
Contributes to and accepts group decisions.	Participates in group process to decide how to move the entire group over the Wall.

5. Participates four days yearly in hiking and orienteering activities at resident camp.

Individual Objectives	*Activities*
Demonstrates understanding of over and under.	Goes over and under obstacles on a hike in response to verbal commands.
Recognizes an object which does not belong in a particular environment.	Picks out objects that don't belong on the hiking course during a litter hike.
Improves short-term memory.	Remembers simple instruction on an orienteering course.
Sorts by shape, size, and length.	Collects firewood and sorts by tinder, kindling, and fuel.

6. Develops during the resident camp experience prescriptions for use by parents relevant to activity of daily living skills.

Individual Objectives	*Activities*
Toilets self.	Practices intensely while various instructional techniques are experimented with and monitored (for all four objectives).
Uses appropriate eating utensils.	
Dresses appropriately to weather conditions.	
Organizes and keeps track of personal belongings.	

7. Participates in a weekend buddy wilderness camping program in a national forest campground.

Individual Objectives	*Activities*
Talks about disability.	Takes part in 2-4-6-8 introductory sharing activity.
Identifies nondisabled as well as disabled peers as friends.	Answers questions on camp evaluation sheet about buddy weekend.
Recognizes that all people have strengths/weaknesses.	Is active in magic circle campfire discussions.
Works cooperatively with nondisabled peers.	Participates with paired buddy in tent set-up.

8. Participates in outdoor recreational activities at local facilities or areas.

Individual Objectives	*Activities*
Demonstrates skills in individual sports.	Participates in sports such as archery, ice skating, and cross-country skiing.
Demonstrates skills in group games.	Participates in New Games activities.
Is a spectator at an outdoor sports event.	Watches an activity such as a dog sled race.
Develops a hobby interest.	Takes part in a nature photography class or develops a leaf collection.

Key Assessment Criteria

- *Generalization.* Are skills/attitudes/behaviors demonstrated in outdoor experiences carried over to other settings, e.g., school, home?

- *Reinforcement values.* Do selected experiences appear to be inherently reinforcing to participants? Are recreation and education being meshed?

- *Novelty/adventure.* Are outdoor programs providing new experiences that foster excitement and greater independence through risk taking?

- *Affective impact.* What are concommitant emotional outcomes of outdoor experiences, e.g., effects on self-concept, student-teacher rapport, teacher-teacher rapport, enthusiasm, motivation?

- *Process considerations.* Are planned activities being conducted appropriately and consistently?

Alternative Methods of Program Development

This program — awareness component — depicts outdoor applications and alternatives for Ruth Webb's program, "Sensory Motor Training of the Profoundly Retarded" (American Journal of Mental Deficiency, 1969, 74, 283-295). Such alternatives have been successfully employed in many skill areas offering both students and staff novel techniques and approaches to instructional programs.

Program Goal — Raises level of awareness.

Sample Performance Measures	*Outdoor Alternatives*
1. Approach/Avoidance	1. Smiles or turns toward novel sounds. 2. Maintains contact with various textures — e.g., sand;, grass, wet clay, water.
2. Avoidance/Approach	1. Avoids friction on skin from rubbing with various natural textures. 2. Avoids temperature extremes— e.g., cold stream, camp fire.
3. Discriminatory Reactions	1. Discriminates differences of outdoor surfaces — e.g., smooth, rough, hard, soft. 2. Discriminates extreme odors and tastes — e.g., swamp smells, animal smells, plant tastes.

Common Awareness Exercises	*Outdoor Approaches*
1. Tactility	1. Crawls over/through various natural textures — e.g., sand, grass. 2. Rolls over/through various natural textures. 3. Pets/handles camp animals. 4. Uses a stimulation box of natural materials.
2. Kinesthesia	1. Rolls down various terrains. 2. Uses rope/tire swings. 3. Tracks balloons in pond while boating.
3. Vision	1. Takes night walk using flashlight. 2. Uses nature mobiles. 3. Tracks balloons in pond while boating. 4. Changes angles of vision in the woods — e.g., view from lying down, one eye closed.
4. Taste	1. Tastes natural objects. 2. Is exposed to extreme tastes during outdoor cookery — e.g., lemon, salt, sugar.

5.	Olfaction	1. Smells various objects while on swamp walks. 2. Crushes/smells natural objects.
6.	Temperature	1. Plays in snow. 2. Participates in activities around the campfire.
6.	Audition	1. Is exposed to a variety of natural sounds and tapes/ records them.
8.	Sensory Integration	1. Participantes in songs/initiative play.

Program Goal — Improves manipulation of environment

Sample Performance Measures		*Outdoor Activities*
1.	Reaching	1. Reaches for natural objects — e.g., nature mobile.
2.	Grasping	1. Grasps natural objects.
3.	Others —holding, throwing, communicating needs, and relating with others.	

Common Manipulation Exercises		*Outdoor Approaches*
1.	Reaching	1. Reaches for natural objects. 2. Reaches for food at meal time.
2.	Grasping	1. Participates in grass blade tug-o-war. 2. Grasps oars while rowing. 3. Grasps crayons for leaf rubbing.
3.	Holding	1. Holds collection bag on scavenger hunt. 2. Holds utensils for activities of daily living skills — e.g., toothbrush, spoon.
4.	Developing Relationships	1. Interacts during cooperative initiative tasks. 2. Interacts with bunkmates.

Program Goal — Improves movement

Common Movement Exercises		*Outdoor Approaches*
1.	Rolling	1. Rolls over spool on obstacle course. 2. Log rolls through/on natural surfaces.
2.	Bouncing	1. Participates in trampoline activities. 2. Takes part in outdoor games, animal walks.

Program Goal — Develops posture and locomotion

Common Posture/Locomotion Activities	*Outdoor Approaches*
1. Crawling	1. Crawls through nature obstacle course.
2. Climbing	1. Climbs hills/rocks.
3. Walking	1. Gives animal walk impressions.

Section Two

PLAY OPPORTUNITIES FOR ALL

Creating Leisure Opportunities for Children with Disabilities

Claire Foret, Mary Ann Loeffler, Marcia Jean Carter

Creating leisure opportunities for children with disabilities consists of developing play, sensory, and developmental skills, and then facilitating transfer and application of these skills within home and community. Development and transfer of these skills facilitates appropriate community placement. It also aids in obtaining desired learning outcomes and encourages lifelong participation in leisure activities.

Key factors in creating leisure opportunities for children with disabilities are the abilities of individuals, selection of appropriate activities, and adaptations made to assure safety and success. This article discusses how adult leadership can affect development of individual abilities. Adaptation processes are presented and representative activities described.

Leadership to Enhance Abilities

To enhance individual abilities adult leaders must assess each participant, expectations relating to the experience, and environmental resources available. Leaders must design functionally appropriate and relevant experiences and monitor and evaluate skill acquisition and participant progression. This can be accomplished by using a variety of leadership techniques, some of which may be unique to working with individuals with disabilities. For easy reference these techniques are grouped according to participant disability category.

Techniques to Facilitate Leisure for Individuals with Physical Disabilities

- Focus on participants' abilities; ask first if assistance is required.
- Develop a communication system, especially a way to identify basic needs and handle any emergencies.
- Understand that the age of onset of disability and degree of residual ability may determine appropriateness of leisure activities.
- Orient participants to program areas; show location of key features of rooms or areas.
- Know that use of appliances and mobility aids requires a slower pace as appliances can be heavy and they may create balance and coordination problems.
- Be aware that sudden or quick movements, dampness, temperature changes, and fine motor activities (arts and crafts) may cause muscle contractures limiting range of motion and further restricting movement.
- Include activities to strengthen muscles, increase breathing capacity, and improve posture.
- Substitute players, skills, rules, equipment, and/or body parts/positions to compensate for limitations.
- Be aware of participant reflexes that are uncontrolled, the presence of pressure sores, seizure behavior, and any possible side effects of medications.
- Before adapting any activity ask this question, What will the change or alteration do to the quality of the experience for everyone involved? (Carter, Browne, LeConey, & Nagle, 1991, p. 131).

Techniques to Facilitate Leisure for Individuals with Cognitive Disabilities

- Use physical guidance, demonstration, and manipulation with verbal cues and directions to assist individuals in developing skills.
- Be aware that participants cue off how something sounds rather than what is said; leaders must be consistent, clear, and precise in voice tone, quality, and communication pattern.
- Precede a direction with a participant's name, then give one- or two-step directions.
- Know that a description must be precise — "over there" is too general; "stand on the black line" is much more precise. Use a few key words, frequently, to give directions.
- Introduce new skills early in the activity time.
- Participants learn by doing. Repeat activities using a variety of techniques. Keep in mind that skill levels will not always improve with experience.
- Structure activity periods to control hyper and hypo activity levels of participants.
- Be aware that preparation and follow-up activities are just as important as activities themselves. ADL activities and carry-over applications must be taught by participant interaction.
- Set parameters for participation before activities begin; consistently follow established rules; keep personnel activity areas, and schedules consistent.
- Be patient. Break skills down to their fundamental parts; build from part to whole.
- Plan for transition between activities; make an activity out of time between scheduled activities. This prevents loss of time, energy, and participants (Carter et al., 1991, p. 133).

Techniques to Facilitate Leisure for Individuals Having Emotional and Behavioral Needs

- To provide structure necessary for participant success, establish rules before activities begin. Give examples of "dos and don'ts" and consequences for behavior.
- Be aware of your body language, voice tone and facial features, gestures, and composure as participants "read" your responses and may be triggered by nonverbal communication.
- Use touch and physical contact with discretion as participants may not comprehend their significance or meaning; some participants may fear closeness.
- Plan activities to build on social sequence; individual activities precede group activities and persons represent a variety of roles so participants identify and relate to authority figures.
- Incorporate immediate extrinsic forms of reward and move toward participants being motivated by "self" or internal satisfaction.
- Be aware participants may lack needed levels of energy (fitness), may tire easily due to medication, or may appear to be easily distracted by extraneous environmental stimuli. Staff must be aware of extra noise, equipment, people, or other distractions in activity areas. Also be aware of the amount of endurance/strength required to perform tasks. Restlessness may result from already lowered energy levels.
- Know recreation activities strengthen weak defense mechanisms and provide an outlet for expression, serving to temper energy levels.
- Assist participants in making decisions and choices, if necessary. Individuals may lack appropriate discrimination skills and abilities to set realistic priorities.
- Recognize complete newness may cause participants to be upset; they may not quickly adjust to change or make easy transitions between activities.
- Remember that recreation activities offer opportunities to practice social skills and remove barriers to appropriate leisure experiences; self-reinforcing experiences aid development of positive self-concepts.

Adaptation Processes

In adapting leisure experiences leaders may consider one or more of four adaptation processes:

- Adjusting leader-participant relationships.
- Altering behavioral expectations of experiences.
- Modifying procedures or rules of activities.
- Modifying resources and training provided supportive personnel.

To adjust leader-participant relationships consider modification of the leader's communication and interaction methods. It may help to modify the degree of control by the leader. Use various intervention processes, such as reality orientation and regrouping of participants.

When altering behavioral expectations of leisure experiences, physical, cognitive, and affective/social behavior modifications must be taken into consideration. Physical modifications include coordinating fewer body parts, reducing number of items to be dealt with, and reducing speed of tasks performed. When making cognitive modifications,

simplify organizational patterns, reduce number of steps involved to complete a project, or select from fewer alternatives. When making affective/social behavior modifications, reduce number of participants, increase structure of activities, modify rewards (intrinsic to extrinsic), and allow more or less freedom of choice (Carter et al., 1991, pp. 130-131).

To modify procedures or rules, several adaptations can be made:

- Adjust size or space in which activities occur.
- Alter number of players or player positions.
- Allow more time.
- Allow a greater number of actions.
- Substitute actions.
- Adjust number of body parts used.
- Alter distances.
- Adjust time allowed to score or to win.
- Permit assistance.
- Develop new ways to perform activities (Carter et al., 1991, pp. 130-131).

Resources include supplies and equipment, areas and facilities, and supportive aspects. In order to modify supplies and equipment change size and weight of materials used, alter colors, and adjust size and grips of equipment to meet needs of individual participants. When utilizing areas and facilities, consider surface textures, size of geographic areas, noise factors, accessibility, and control of heat, light, and electricity.

Modification of supporting aspects of resources includes adjusting number of staff and their assignments, altering timing (daily, weekly) of experiences, and incorporating additional rest intervals. All modifications depend on type of disabilities and needs of participants in the program (Carter, et al., 1991, pp. 130-131).

Activity Selection

When selecting and using activities, focus should be on development of fundamental skills through sensory, perceptual, rhythm, creative, and exploratory activities. Activities selected should lead toward development of lifetime leisure skills, commencing with fundamental skills, including sport skills, and leading to enhancement of resource awareness, decision making, planning, leisure values and skills, and social values (Carter et al., 1991, pp. 125-127). Methods of introducing skills are also important. These are determined through task analysis and activity analysis. Activities should address skills in the cognitive, affective, and psychomotor domains. Leisure opportunities through activities in each domain provide the basis for developing fundamental skills to be used later in the individual's life.

Considering each of the three key factors, participant information, adaptations, and selection of appropriate activities, the following activities are appropriate for children with disabilities. These activities incorporate skills usable in later life and may be modified to a variety of functional abilities, regardless of the child's chronological age.

ACTIVITY 1

Name of Activity: Chutes/Flying Carpets (original idea, Carleton, 1989)

Equipment Needed: Colored strips of cloth, 6-18 feet long, 15-24 inches wide. Handles can be made by sewing a 2 1/2 inch seam on each end of the strip. Insert a piece of 1/2 inch PVC pipe 6 inches longer than the width of the strip into each end. For children with grip problems, a Velcro strip that can be attached to the chute and around the participant's wrist can be added to the ends of the chutes. Note: Material used to make the chutes can be old sheets or material that is on sale at a discount store (Wal-Mart, K-Mart, etc.). Usually if you purchase different lengths of cloth (3 yards, 6 yards, etc. and 36 or 45 inches wide) and in a variety of colors, it is fairly easy to cut them in half and use these for the chutes.

Areas Addressed: Space/form perception, body awareness, spacial awareness, balance, visual motor coordination, haptic perception, eye-hand coordination, visual stimulation, motor planning, and cardiovascular endurance.

Activities:

Chute Park

Arrange chutes on ground, above the ground, at various angles. Have students move on command — right, left, over, under, on the red, the blue, the yellow. Can also use directional arrows on the chutes as an obstacle course for children to follow.

Chute Roll
Have students roll up and out or "dry off" in the chutes.

Partner Work
- Body part identification on self, on partner.
- Push and pull with chutes.
- Up, down, over, follow command by leader.
- Ball, on chutes: roll on ground down the chute, roll and balance while chutes are being held off the ground, ball toss to self, to other chutes. Can also use bean bags, ropes.
- Chute exercise.

Group Work
- Circle chutes with partners (like a pinwheel).
- Lift color of chutes called.
- Chute pass to right or left.
- Ball work within the circle.

ACTIVITY 2

Name of Activity: Ribbon Balls

Equipment: Ribbon balls for each person, tape recorder, music (popular or music of community culture).

Areas Addressed: Cardiovascular endurance, bilateral, and unilateral movements, arm strength, visual and auditory stimulation, flexibility, rhythm, motor planning, fine motor and manipulative skills.

Activities: Turn ribbon ball to music, side arm turns — right and left arms, over the head, by the feet, on the ground, figure-eight, two-handed turning.

- Follow-the-leader: leader starts and then lets individual participants take turns leading the group.
- Locomotor movements while turning the ribbon ball: walk, slide, march, jumping.
- Nonlocomotor movements while turning the ribbon ball: swaying, bending, twisting.
- When the activity is over, have participants roll up the ribbon balls for storage. (This also works on fine motor and manipulative skills.)

How To Make Ribbon Balls:
Supplies needed:
Fishing line, 25# test, 2 feet
1 brass barrel swivel size 7 or smaller
1 rubber ball (6 inches in circumference) or make a small tape ball (wad newspaper up in a ball and put masking tape around it covering the entire ball)
1 metal eyelet
Ribbon or foil crepe paper, 4-10 feet in length, depending on size of the individual who will be using it
8 inches of cotton cord or satin ribbon
1 needle 1 pair of pliers

Procedure:
1. Triple fold one end of the ribbon (folds should be about an inch).
2. Put the metal eyelet through the folds.
3. Place swivel through the cotton cord and tie an overhand knot, joining the ends together on the cord.
4. Cut the fishing line and thread through the needle and push the needle through the center of the ball. Use the pliers to pull the needle through.
5. Tie one end of the line to the swivel, using several figure-eight or overhand knots.
6. Tie the other end of the line to the eyelet in the ribbon, using several figure-eight or overhand knots. Adjust the length of the fishing line to the length of the child's arm from the elbow to wrist.
7. Push the ball down to the end near the ribbon.
8. Adjust ribbon length to the size of the individual using it. A small child will need a shorter ribbon.
9. Approximate cost: $1.00 if a rubber ball is used, $.35 for tape ball.
   NOTE: Participants can make their own ribbon balls and then use these in the activity.

ACTIVITY 3

Name of Activity: Magic Wands

Equipment: Magic wands, two for each student, tape recorder, music 3/4 time.

Areas Addressed: Motor patterns, rhythm, directionality, tactile stimulation.

Activities: Follow-the-leader with the number and ways of hitting the wands, sticks together and in different locations around the body. Simple routines to be done with the music. Can work with partners or in groups of four.

How to Make Magic Wands:
Supplies Needed:
Christmas tree tinsel — enough to make a pair of wands for each person. Can make 5 pairs of wands with one pack of tinsel.
Round cardboard tube from pants clothes hangers obtained at dry cleaners (dry cleaner will usually give these to you) — two per participant

Silver duct tape or colored tape — enough to wrap around each wand.

Procedure:

1. Take a bunch of tinsel.
2. Fold one end of tinsel strands over one end of cardboard tube.
3. Starting at the end of the tube with the folded tinsel, tape the end of the tinsel to the cardboard tube. The tinsel should flow around the tube like a shaker.
4. Continue the tape all the way down the rest of the cardboard tube.

ACTIVITY 4

Name of Activity: The Freeze

Equipment: Record/tape player, music: "The Freeze" or "Stand By Me" (this is a little slower).

Areas Addressed: Cardiovascular endurance, group interaction, following a dance pattern, and rhythm.

Activity: The steps are as follows:

Side step right, cross back left, side step right, kick (tap) left.
Side step left, cross back right, side step left, kick (tap) right.
Back step right, back step left, back step right, kick left, kick left.
Step left, 1/4 turn on left foot
Repeat sequence. Continue until the end of the record is reached.

Modification: Substitute cross back steps with side step right, close left, side step right.

ACTIVITY 5

Name of Activity: Rhythm Plates

Equipment: Two plastic plates (throw-away plates) and a straight back chair for each participant or seated on floor, music with a 4/4 or 8 count beat.

Areas Addressed: Body awareness, following a sequence, rhythm, warm-up activity for cardiovascular endurance.

Activity: Plates serve as a warm-up activity to motivate the individual to participate in an exercise program. Participants will use an eight count beat to touch body parts with plates.

Routine Description:

TAP TAP	Plates together
TAP TAP	Right shoulder
TAP TAP	Left shoulder
TAP TAP	Plates together
TAP TAP	Plates together
TAP TAP	Right knee
TAP TAP	Left knee
TAP TAP	Plates together
TAP TAP	Plates together
TAP TAP	Right elbow
TAP TAP	Left elbow
TAP TAP	Plates together
TAP TAP	Plates together
TAP TAP	Right ankle
TAP TAP	Left ankle
TAP TAP	Plates together

Use eight count tap for other body parts or surrounding objects.

Variations: Leaders should feel free to modify or change the suggested sequence and movements. Also can use participants as leaders.

ACTIVITY 6

Name of Activity: Little Bird

Equipment: Tape/record player, folk song "Little Bird" or "Bird Dance."

Areas Addressed: Fine and gross motor movements and social interaction.

Activity: Group can be seated in chairs or standing in a circle with a partner facing each other. The following sequence is followed:

Move hands like beaks, twice.
Move arms like wings, twice.
Wiggle hips like a tail, twice.

Seated Position:

Swing arms 8 times forward, swing arms 8 times back.

Clap hands with partner (both hands together) 4 times, right hands together, 4 times and left hands together 4 times, repeat handclap sequence.

Repeat all steps in sequence.

Standing Position:

Swing partner 8 counts.

Change directions and swing partner 8 counts.

Everyone move a step to their right, everyone will have a new partner.

Swing new partner 8 counts, change direction and swing partner again.

Repeat entire sequence.

ACTIVITY 7

Name of Activity: Ooh ... Aah

Equipment: Paper plates, plastic bags, paper bags, or no equipment.

Areas Addressed: Tactile and auditory stimulation, rhythm, motor planning, motor patterns, locomotor skills, spatial awareness, body awareness, directionality, and self-image.

Activity: Form two lines (A & B); sit about 4-5 feet away from partner. Using hands, paper plate, or bag, tap out a rhythm.

Chant the following rhyme: "Hello there (child's name) you're looking so fine. Won't you (choose a motor activity) on down the line, Ooh ... aah, ooh ... aah." As a child from line A is moving down the center the rest of the group says, "ooh ... aah" as they clap or tap to the beat. When the child reaches the end of the line, he/she sits down on the side started from.

A child from line B performs his/her movement as you identify them in the above rhyme. Continue until all children perform an activity.

Variations:

- Teacher chooses movements.
- Each pair performs movements together.
- Change verbal beat, e.g., ssh ... eei, ma ... ba.

ACTIVITY 8

Name of Activity: Magic Mountain

Equipment: Hats of different shapes and sizes, tape recorder and music.

Areas Addressed: Tactile, visual, auditory stimulation, eye-hand coordination, cooperation.

Activity: Children are asked to sit within a specific area. As the music is started, a hat is passed and the child places it on his/her head, removes it and gives it to another child who in turn places it on his/her head. This continues while the music is playing. When the music stops the child with the hat on is "out" and leaves the group. Games continues until one person is left.

Variations: Add more hats as you go along. When "eliminated" the children form a circle and pass the hat but when the music stops, they acknowledge who got caught and continue to play.

ACTIVITY 9

Name of Activity: Freeze Please

Equipment: Any type of music.

Areas Addressed: Body awareness, problem solving, decision making, social interaction, auditory and visual awareness, balance, and motor planning.

Activity: The players are asked to move slowly in a certain way (like a horse, snake, bird); they are then asked to increase the movement or change movement they are doing. At the signal "FREEZE PLEASE," all players try to become immediately still and hold the frozen position until "MELT" is called. The melt is the transition to a new movement.

- Children can move with partners. One calls the motion and the other calls the signals.
- When using music, when the music stops the children freeze and the melt occurs when the music begins.

ACTIVITY 10

Name of Activity: Story Activities

Equipment: Simple props depending on the story chosen.

Areas Addressed: Fine and gross motor movements, social interaction, motor planning, visual and auditory stimulation, problem solving and decision making, manipulative skills.

Activity: Assist children in selecting a story. Assign or have children choose a part and explain to each what their responsibilities are and the props they will use. Let them be creative in actual movement. Use local folklore or legends.

ACTIVITY 11

Name of Activity: Puff the Magic Dragon Tail (modified, Smith, 1990)

Equipment: 2-3 foam balls.

Areas Addressed: Manipulative skills, nonlocomotor, locomotor skills, spatial awareness, body awareness, directionality, tactile stimulation, teamwork.

Activity: Group forms a large circle with three persons in the center (magic dragon). The first person is the dragon's head and can defend the tail with hands, legs, and body. The second person is the body and defends tail with legs and body. The third person is the tail and cannot get hit by the lava rocks (foam balls). If the tail is hit with a lava rock, the head (1st person) goes back to the circle, the body (2nd person) becomes the head and the tail becomes the body. The person who threw the lava rocks and hit the tail becomes the new tail.

Variations: Throw one lava rock at a time. Throw 2-3 lava rocks at a time.

ACTIVITY 12

Name of Activity: Moon Golf

Equipment: Poco balls (Global Games[1]) or 4" square pieces of rubber or nerf frisbees, boxes or containers of various sizes.

Areas Addressed: Manipulative skills (throwing), perceptual motor, social interaction.

Activity: Set up containers (craters) around the field/gym in a designated layout (craters 1 to 9). Each player keeps track of how many launches (throws) it takes to score on each crater. Score cards are optional. Total launches are the moon golf score. Par can be set for the course as well as for each crater by leader. Students can work individually, in pairs, or in teams.

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Educational Play for Preschool Children with Disabilities

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Play is such a natural element in development that we seldom need to teach children to play, but in this article emphasis is on children whose functional capabilities are limited by disability and who do not engage in play activities. Specific tasks are included to achieve prerequisite stability, locomotor, and object control skills needed before more complex play tasks and social interaction can be attained. In this manner at-risk children can develop appropriate play skills essential for overall development.

Child Development and Play

Play, from simple to complex activities, is a basic function of development in children. Infants are interested in sensations, movement, repeating actions they have created, and exploring their environment. Beginning at 6 to 9 months of age, infants become involved in manipulative play, and toward the end of the first year they achieve some mastery over their movements and become interested in new discoveries. Children also become more aware of their ability to make things happen in play.

During the second year, children develop the ability to walk independently, build, imitate, and pretend in their play. With increasing experience their play activities become more complex. Children learn to combine toys with actions in their play, and during their second and third year children discover various uses for their toys. These uses may change with their imagination or when another function of the toy enhances their interest. The ability to combine a variety of toys and actions at the same time expands the child's variety of play experiences and demonstrates an awareness of increased cognitive as well as motor development.

Finally, as children move from repeating movements with single toys to combining toys and actions in an unordered way, they reach a point where they can combine toys and actions in an ordered way.

Play with Other Children

Young children learn to play with others in a manner similar to learning to play with objects. Development from simple to more complex types of play with other children proceeds from a point of having no play skills, to contact with other children or side by side play, to playing cooperatively with others. Five categories have commonly been used to describe social play (see below).

For children with disabilities, their lack of motor development may affect their progression through

these categories. Children who have not achieved stability or developed object control or locomotor skills are restricted in their social play development. Not only will they not interact with other children but they will also have difficulty in generating movement to initiate solitary play. Likewise children with learning deficits commonly demonstrate low levels of social interaction, processing ability, and motor development that affect their ability to play successfully.

The five categories of play, including a brief definition of each, are:

Solitary Play: a child plays alone without an interaction in the surrounding activities of other children.

Onlooker Behavior: a child shows an interest in the activities, primarily of others, but does so from a distance and by watching others play.

Parallel Play: a child intentionally plays next to another child but does not interact or actually play with the other child although both children may play with similar toys.

Associative Play: children play together taking turns and sharing toys.

Cooperative Play: children play games with definite rules that must be followed such as follow the leader. Generally, one or two children are accepted as being the leader(s).

Play for Children with Disabilities

For children restricted in play opportunities or lacking motor, sensory, or cognitive development necessary to generate or facilitate higher levels of play experiences, specific goals and/or interventions should be established. A generalized goal of early intervention is to address potential or identified developmental deficits of children with disabilities that may limit their motor ability. In recognition of the need for intervention services for children during preschool years, P.L. 99-457 was enacted, extending the rights and privileges of P.L. 94-142 to children 3-5 years of age and, at the discretion of individual states, infants from birth to 2 years of age. Providing necessary training to young children is imperative, recognizing that prevention is preferable to remediation.

Early intervention for children with disabilities is typically focused on enhancing competencies prerequisite to academic, social, and daily living activities, including cognitive, self-help, social, and communicative skills. Motor activities can provide direct benefits for overall development, enhancing academic competencies. A number of early intervention goals for facilitating play in children with disabilities include toy play, motor control, differentiated responses to

environmental cues, and social competence. Commonly these behaviors emerge spontaneously in typical development through maturation, play, and social interaction with parents or siblings, without direct training. For children with disabilities it is important to address these goals, emphasizing facilitating behaviors such as motor development, toy play, and social competency.

Positive effects are evident with early intervention in young children. For children with disabilities it is also evident that improved cognitive functioning, social skills, language skills, and motor development occur as a result of early education programs. Similar conclusions regarding the positive effects of early intervention are apparent in numerous cases of early intervention research on infants with disabilities.

Motor Development, Cognitive Play, and Social Competence

Adults closely monitor domains associated with academic growth during the preschool years while neglecting the relative importance of the motor domain. It is not unusual to find preschools lacking specific programming in motor development, demonstrating the belief that outdoor free play will satisfy children's motor needs. The importance to cognitive and social competency of appropriate motor skills development in preschool children with disabilities should not be minimized.

One outcome of providing motor development training to preschool children with disabilities should be gains apparent in other domains such as cognitive and social development. Empirical support for direct interaction of these domains is not extensive. Preschoolers with motor deficiencies are double at risk to experience delays in associated domains. This highlights the need for the development of motor and play skills in preschool children with disabilities.

Motor and Social Development

Although the impact of motor development on social competency has received more attention than the impact on cognitive skill, in depth study remains lacking. Children's early social skills (e.g., peer relations, interaction skills, social referencing) rely on their ability to "keep pace" with their peers. For children with disabilities, mastery of motor development fundamentals may promote more mutual interactions with parents or peers. In turn, opportunities are then created for communication, educational exploration of the environment, and improved participation in activities normally associated with the social sequence level of development. Children with disabilities will generally engage in more solitary play and less social play than nondisabled peers. In addition, they require and receive more physical assistance from nondisabled peers while attaining a lower rate of social play than children without physical disabilities. In some cases, such as sensory disorders, environmental play movements are restricted if children cannot respond to sensory stimuli, including sights or sounds.

Children who are physically competent usually attain higher status and social success than children who are physically unskilled. More sophisticated social interactions are associated with motor behaviors and are observed less frequently in children with disabilities than nondisabled children.

Most of the research on play indicates that children who are given high sociometric ratings by teachers also receive more positive ratings on measures of physical attractiveness, athletic skill, and toy play than those children who were given lower sociometric ratings. Such findings suggest not only that children will benefit socially from increased motor development, by keeping pace with their nondisabled peers, but that attainment of appropriate motor development by children with disabilities may alter ways in which others view them and how they are socially accepted.

In short, young children must attain appropriate levels of development in order to advance certain social and cognitive competencies. For many children, training in specific social skills requires motor competency to fulfill these goals.

Specific emphasis must be given to developing procedures for teaching children with motor delays to: acquire age-appropriate motor skills; differentiate motor responses to social environmental cues; and demonstrate the ability to adapt to a variety of stimuli presented in the social context (social competency/reciprocity).

Provision of such skills will benefit young children with disabilities relative to their social skills, as well as increase their ability to function independently and productively in play situations.

Stimulating Play

There are several ways to initiate and facilitate higher levels of play experiences for children with disabilities. These include the following:

Motor development — It is essential to stimulate the young child to move and participate in play activities. Children with motor dysfunctions require active participation to increase the level of motor development necessary to adequately explore the environment. For example, children with developmental delays may not possess sufficient stability to sit unsupported, manipulate objects, or crawl to reach a toy. Adequate motor development allows them to develop appropriate play skills as well as developing in the social and cognitive domains.

Social interactions — Social interactions with others (peers, parents) should be stimulated to initiate responses to play. For example, a smile, touch, nod, or other nonverbal response can convey social responsiveness although the child may be limited in motor imitation of the task.

Imitation — Actions observed in play activities should evoke a response or be imitated. For instance, an imitation of a play sequence or movement can occur by making the same sound or imitating the same movement as the infant. Parents should be careful not to do the response for the child but provide feedback by responding or copying the movement.

Prompting — Play responses should be initiated by the child. However, in some situations a verbal, visual, or physical prompt may be needed to ensure imitation of a task. Prompts should be as natural as possible and not be used to complete a movement but to assist in generating a movement, such as grasping a child's wrist to move toward a toy. Further, promoting procedures are essential for children with motor delays to initiate many movements and essential for attaining their developmental milestones.

Planning time — Time is required to process a response or plan a movement. If a movement is initiated or prompt is given, the infant requires sufficient time to assimilate the information before a response is generated. For example, if a rattle is shaken, the child will need enough time to locate the rattle and realize the noise came from the toy. Time and patience are needed to allow the child a sufficient period to use the information available. Verbal or nonverbal encouragement can aid or prompt the child to use the information at their own level of functioning and plan a response.

Security — Children should be comfortable and safe in their surroundings. They will sometimes revert to their own play settings or older toys to feel secure. As a child's play area expands from a designated play space they learn to vary their response and explore their environment. This space can be constructed by the child, involve special toys, or be in a designated indoor or outdoor area. The area should also be free of auditory or visual distractions as well as any unsafe or harmful materials. Initially toys or interactions can begin in the designated area and expand to a larger area or alternative setting.

Overstimulation — Too much stimulation can overcrowd the child's system and interfere with ability to process information. Also, if children have difficulty in processing information, they may not respond to specific cues or directions. Children may be confused about expectations and not respond even if they have the capabilities. Further, too much information overcrowds the system so the child has difficulty attending to relevant information. To overcome this problem, interactions can be reduced such as using one toy or one method of prompting a response. Later, additional objects can be included as the child learns to deal with additional stimuli.

Behavioral consequences — Consequences will ensure behavior either occurs again or is eliminated. Appropriate behavior should be rewarded consistently to ensure it will occur again even if it is an approximation of the desired response. Later, complete response can be generated by using consequences as well as prompting procedures. Children will naturally respond if rewarded by a smile or touch. Later, completion of a task, imitation of a behavior, or playing successfully with others will reward their efforts.

Active involvement — Movement is the catalyst of all learning and should be stimulated to ensure adequate development and peer group interaction. Achieving developmental milestones will allow children to interact socially and learn through the medium of play. For example, children should be actively placed in play settings to socially interact with others and

move in response to their environment. Lack of appropriate play skills in many individuals with disabilities affects their overall development. Play is how children lay foundations for further growth and development. Instead of overprotecting children with disabilities, motor development should be actively encouraged and stressed to offset developmental delays and achieve peer group skills.

Play Activities

The following section includes examples of play activities for young children with disabilities. Prerequisite skills are presented in stability, object control, and locomotor play and are followed by more complex skills in those areas. Once these skills are achieved the child can progress to other play activities.

Stability Play

Objective/Skill Level 1: Head control

Equipment: Soft surface area, bright objects.

Action: From a supported sitting or lying position have the child hold the head in an upright position. Cue the child to look up at an object or toy.

Prompt: Physically support the child in a sitting position holding the back of the head to support the position. As the child assumes head control gradually fade the prompt.

Praise: Praise any efforts to look or hold the head.

Objective/Skill Level 2: Sitting upright

Equipment: Soft surface area, support pillows or chairs.

Action: From a creeping, crawling or a laying (on stomach) position, have the child turn over to a sitting position using the arms and hands to push to a sitting position. Balancing in this position may be accomplished when the legs are bent and crossed (Indian style).

Prompt: If the child does not initiate the action, pat the back support of the pillow or the seat of the chair, cuing the child to "sit up tall" or modeling the correct position. Physically prompt the movement by turning the child by the shoulders and supporting a sitting position.

Praise: Praise the child for all attempts to shift the weight onto the buttocks and push the torso up over the hips.

Objective/Skill Level 3: Tracking with head movement while sitting

Equipment: Brightly colored objects or lights, support pillows or chairs.

Action: After the child can maintain a seated upright position, move objects or lights to the right and left allowing the child to track the objects and turn the head to maintain eye contact.

Prompt: If the child has difficulty remaining upright, use the support objects or support the back with your hand. To initiate the tracking action, cue looking at the ball, "Watch the ball." Physically prompt the eye movements by gently touching the chin. You can move the ball further to each side, requiring child to turn the head more.

Praise: Praise the child for any effort to maintain eye contact with the object.

Objective/Skill Level 4: Reaching with upper body tilt

Equipment: Brightly colored objects, support pillows or chairs.

Action: Once a seated upright position is maintained, allow the child to reach for and lean toward objects that are passed back and forth in front of the eyes. Allow the child to grasp the object as the hand contacts it or the hand holding the object.

Prompt: If the child does not initiate reaching, verbally cue the response. If child reaches but refuses to lean toward the object, move the object a little closer or further away and prompt by grasping the wrist and moving the arm in direction of the object.

Praise: Praise the child for all attempts to move hand closer to the object.

Stability Play — Additional Activities

Puzzles	I spy
Finger painting	Coloring
Modeling clay	Sandbox play

NOTE: There is some interaction between object control and stability play activities with the major difference being that the primary emphasis of stability play is working on balance and stability, while in object control the child manipulates, exchanges, or controls objects.

Object Control Play

Objective/Play Level 1: Tracking objects and reaching

Equipment: Brightly colored objects or lights.

Actions: In a sitting or back lying position allow the child to focus on an object and visually track the object in a sideways, up-down, or circular pattern. Allow the child to reach for the object if he/she initiates a response.

Prompt: If the child has difficulty, verbally cue the child to look at the object. Use a physical prompt to direct the child's attention if needed. Vary the speed of the object to ensure attention is focused on the object.

Praise: Praise the child for any response with verbal ("good looking") or social interactions (hug or smile).

Objective/Skill Level 2: Reaching

Equipment: Brightly colored objects or lights.

Action: After the child's attention is focused on an object, encourage reaching for the object. At first move the object closer to the child and then farther away to stimulate reaching.

Prompt: If the child has difficulty reaching for the lure use an object with a noisemaker or your face to facilitate the action. Move the child's arm farther forward by grasping the wrist and prompting a re-

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sponse. Use several trials to ensure a response at various distances and praise any initiation of movement. For children with sensory impairments, prompting manually or with sounding devices should be used to promote reaching from a sitting position.

Praise: Praise any response of movement with either hand and allow the child as many trials as needed.

Objective/Skill Level 3: Grasping

Equipment: Brightly colored objects of various textures and size.

Action: As the child reaches for an object, move or place the object in the hand allowing the child to feel and grasp the object.

Prompt: If the child does not wrap the fingers around the object, verbally prompt the action to hold the object. If grasping still is not initiated, place your hand around the child's and press the fingers gently around the object.

Praise: Praise any attempt to reach or grasp the object, even if the object is dropped.

Objective/Skill Level 4: Manipulating

Equipment: Objects of various size and shapes.

Action: After the child is able to grasp objects, allow the child to manipulate them in different locations or directions.

Prompt: Verbally cue the movement to touch the object physically. Also, manipulation could be used to move objects.

Praise: Praise picking up objects and any arrangement or changes in location or directions.

Objective/Skill Level 5: Exchanging

Equipment: Objects/toys of various sizes, shapes, colors and textures.

Action: In a sitting position allow the child to grasp and manipulate objects, encouraging the exchange of objects from hand to hand or to another person.

Prompt: Verbally encourage the child to put the toy in the other hand or hold out your toy so the child can see it and reach for it. Physically prompt movement by grasping the child's hand and putting the toy in the other hand.

Praise: Praise any initiation to exchange objects or share them.

Objective/Skill Level 6: Building

Equipment: Bright interlocking or stackable objects (blocks), mesh-blocks, colored blocks, or boxes.

Action: In a sitting position, allow the child to manipulate objects and encourage combining them together. Place object in front of the child to stimulate the movement.

Prompt: Verbally encourage the child to stack objects or model by building with the same materials the child is using. Physically help the child to balance objects on top of each other.

Praise: Praise any attempt at joining two or more objects together or placing them next to each other to make something new.

Object Control Play — Additional Activities

Zipping	Clay
Buttoning	Sand
Pegboards	Finger painting
Blocks	Dominoes
Water toys	Connecting toys (Legos)

Ball, balloon or beanbag

Locomotor Play

Objective/Skill Level 1: Crawling

Equipment: Brightly colored objects.

Action: Place the object directly in view of the child who is in a sitting or lying (on stomach) position. Tell the child to get the object.

Prompt: If the child does not initiate any action place the object closer and verbally direct attention to the object. Show the child, if necessary, moving on your hands and knees with your chest close to the ground. Progressively put the object farther away each time and manually prompt a movement to the object by grasping the wrist and moving the arm forward.

Praise: Praise the child for any effort to move or reach toward the object.

Objective/Skill Level 2: Creeping

Equipment: Brightly colored objects.

Action: Place the object directly in view of the child who is in a sitting position or on hands and knees. Tell the child to get the object.

Prompt: If the child does not initiate any action place the object closer and verbally direct attention to it. Show the child, if necessary, moving on your hands and knees. Progressively put the object farther away each time and manually prompt a movement to the object by grasping the wrist and supporting the waist as the child moves.

Praise: Praise the child for any effort to move or reach toward the object.

Objective/Skill Level 3: Kneeling

Equipment: Brightly colored objects.

Action: From a creeping position allow the child to shift weight to the knees aided by an object or extra hands.

Prompt: If the child does not initiate the action, verbally prompt and model a kneeling position with

the knee on the floor. Then prompt shifting the weight and moving to a kneeling position.

Praise: Praise the child for any effort to move to a kneeling position.

Objective/Skill Level 4: Standing

Equipment: Cushioned playing surface (e.g., grass, soft ground, or carpet), large, stable object.

Action: From a kneeling position, allow the child to shift weight onto feet and use arms and hands to pull self to a standing position, aided either by a sturdy object or extra hands for balance and support.

Prompt: If the child does not initiate the action, verbally cue the action ("stand up big and tall") and model by pulling yourself up to a standing position.

Praise: Praise the child for any attempt to shift weight onto the feet and raise the hips.

Objective/Skill Level 5: Walking/Exploration

Equipment: Large, stable objects in close proximity or hand support.

Action: Once the child is standing, verbally cue stepping, allowing child to take steps toward persons, places, or objects or hold your hand.

Prompt: If the child does not initiate the action, verbally cue movement to a person or place. Physically prompt movement by walking behind the child and holding the hands slightly.

Praise: Praise the child for any effort to initiate stepping.

Locomotor Play — Additional Activities

Simon Says	Climbing
Follow the Leader	Pulling toys
Kite flying	Animal walks
Parachute games	Walking around objects
Red Light-Green Light	

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Facilitating Play Skills: A Developmental Approach for Children with Disabilities

Sally Leme

The necessity of engaging in play is well documented. Because of the recognized importance of play in development of children, it is essential to all — including children with disabilities. "The relatively normal development of sensorimotor play in most groups of young handicapped children suggests that sensorimotor play may be as important a learning modality for them as it is for young non-handicapped children" (Rogers, 1968, p. 165).

Stages of Play Development

The most widely cited and applied stages of play development are those suggested by Parten in 1932. She observed play behavior of nursery school children and characterized their play into the following categories:

- *Unoccupied Behavior.* Child plays with own body, occupies self with watching anything of momentary interest.
- *Onlooker.* Child watches other children play.
- *Solitary Play.* Child plays alone and independently without reference to what others are doing.
- *Parallel Play.* Child plays independently with toys similar to those of children in the group; plays beside rather than with other children.
- *Associative Play.* Child plays with other children with little organization; individual interests are never subordinated to will of group; small groups of 2-3 are most common.
- *Cooperative Play.* Group play organized to achieve a goal; division of labor and taking different roles are used to reach set goals.
- *Competitive Play.* Participation in regulation sports with specific, adult rules. (Parten, 1932, p. 249-251)

Parten's work has been utilized by researchers and practitioners alike as a model of play skill development. Wessel and Curtis-Pierce (1990) use Parten's stages as a basis for selecting appropriate play, given a child's level of play development (see chart on next page).

Adults must not expect the play of handicapped children to be like that of their nonhandicapped age mates, nor should they discourage play that may seem immature for children's chronological age but is appropriate for their mental age. Adults should encourage the development of more mature play, however, and provide opportunities for play development at home and at school for every handicapped child (Bergen, 1988, 154).

The general conclusion supported by research suggests development of play progresses in a similar fashion, regardless of handicapping conditions. Children with disabilities may, however, display delayed play development in one or more areas.

Play Development of Children with Disabilities

"Those who know and work with handicapped children may question the justification for treating them as a separate and homogeneous group" (Mogford, 1977, p. 170). Indeed, it is inappropriate to suggest children with disabilities can easily or logically be lumped together.

Further, all children with the same diagnostic label are no more homogeneous than are all children with disabilities. It is helpful, however, to know trends or tendencies that have been noted in research. Bergen (1988), Mogford (1977), and Rogers (1988) have summarized recent research findings on play activities of children with various disabilities. Conclusions categorized by disability grouping include the following:

Cognitive Disabilities

- Play stages are observed in children with cognitive disabilities and the same sequence of play development is seen.
- Stages of play development approach the mental age, rather than chronological age of the child.
- Unoccupied or solitary play is most frequently observed.

Stages of Play Skill Development

Sequence	*Description*	*Example of Play Activity*
Individual Play	Child plays alone and independently with toys different from those used by other children within speaking distance.	Child rides tricycle on pavement while other children play with balls, ropes, etc.
Parallel Play	Child plays independently beside, rather than with, other children.	Child plays on scooter-board. Other children also play on scooter-boards. No interaction between children.
Associative Play	Child plays with other children. There is interaction between children, but there are no common goals.	Child plays Fishing independently, alongside other chidlren.
Cooperative Play	Child plays within a group organized for playing formal games. Group is goal directed.	Children play Cageball Push together.

(Wessel & Curtis-Pierce, 1990, p. 57)

- Little social play occurs.
- Interaction occurs more frequently with adults than peers.
- Structured, concrete play materials are preferred to abstract items.
- Gains in play development are related to severity of cognitive disability; more severely disabled children display fewer gains.

Visual Disability

- Children with visual impairments demonstrate significant delays in sensorimotor play development.
- Development of play with objects is delayed.
- Repetitive, stereotyped play with their own bodies is frequently observed.
- Use of hands is more prevalent in functional and exploratory play than in comparison to that of sighted peers.
- Toy preferences are similar to those of sighted peers.
- A majority of children with visual disabilities engage in symbolic play (make believe) but tend to participate in concrete, functional play more frequently than their sighted peers.

Auditory Disability

- Auditory disability does not appear to delay development of sensorimotor play.
- Rate of more advanced play development has been linked to socioeconomic status, acquisition of hearing aids, and early training.
- Deficits in symbolic and dramatic play have been linked to delayed language acquisition.
- Less interactive and more constructive play are observed in children with auditory disabilities in comparison with hearing peers.
- Language and level of social play appear to be related.

Autism

- Children with autism display more oral and repetitive use of toys and a failure to combine toys in a creative way.
- There is a lack of variety in their play repertoire.
- Children with autism spend a greater portion of their time engaging in immature forms of play than do nondisabled children or children with cognitive disabilities.
- There is a relationship between level of play and receptive language.
- "Indeed, autistic children appear the most handicapped in all aspects of play" (Mogford, 1977, p. 176).

Physical Disability

- Delays or deficits in play development are dependent on severity of physical disability.
- Children with cerebral palsy have been observed to demonstrate less manipulation of objects; visual exploration is greater than that of nondisabled peers.
- Children with physical disabilities show a narrower range and lower frequency of play behavior with a higher frequency of social behaviors than do their developmental-match peers.

The Challenge to Provide Appropriate Play Experiences

The possibility that children with disabilities may have delays in play development poses a challenge to professionals who work in the areas of education, recreation, and leisure.

Do not assume a certain chronological age indicates a level of readiness for structured play or competitive games. A high level of motor skill development does not necessarily ensure a comparable level of play skill development.

For example, a child with autism may have well-developed basketball shooting skills but may have no concept of team play or the complexities of a game situation. "Unfortunately, many physical educators assigned to work with 3- and 4-year old handicapped children teach only motor skills or else teach motor skills independently of play skills" (Sherrill, 1986, p. 105).

> I looked out and there in the middle of the confusion was Billy, my best athlete, who could turn flips on the trampoline, outrun or outthrow any of the "normal" children. He stood frozen, hands over his face, as if to protect himself, in a stopped posture of fear, eyes closed, teeth clenched, and muscles rigid.
>
> It was only then that I realized that Billy had never been in a game with more than ten children, had never been chased, pursued by a group, had never been exposed to the high intensity of noise that we take for granted in the gymnasium. (Sherrill, 1981, p. 75)

Table 1. Factors to Consider in Assessing Exploratory Play

Toy	Self Initiated?	Duration	Manipulations*	Appropriate?	Comments

Instructions: Present toys in sets of four, listing toys in the left column; scatter toys to determine child's movement and searching behaviors. Summary information will include data or statements on the following information: toy preference, average duration, independence of play, appropriateness of play, range of manipulations.

*Code: L, lift; Sh, shake; Sq, squeeze; Pl, pull; Ps, push; Ro, rotate; Sl, slide: T, throw, Re, repeat.

For further assessment ideas, see Wehman (1979). (Musselwhite, 1986, p. 95)

Frequently, curricular decisions are made based on assumptions that may not be true. Many times children with disabilities are thrust into situations demanding social skills and play behaviors which they have not had an opportunity to fully develop. The trend to mainstream children with disabilities into physical education classes and into recreational settings has caused this problem to occur with increasing frequency. Too often children with disabilities are compared to chronological age peers when, in fact, their development in play skills as well as social, motor, and cognitive abilities may be significantly delayed (Leme, 1983, p. 15).

Assessment of Play Development

A variety of formal play assessment tools are available for formalized evaluation of play behaviors. These tools may be of great use to researchers, but are often cumbersome for practitioners and invalid for use with children with disabilities.

The simplest way to assess play behaviors is to carefully observe what a child does in a variety of play situations. Such observations should involve the child with a small group of children, in a variety of environments, with and without play objects. States of play development identified by Parten should be used as a guide to determine developmental level of play behavior. Toy preferences can be determined by systematically exposing children to different play items within a loosely structured setting. A sample score sheet for recording toy play behavior is given in Table 1.

After several observations it should be possible to characterize play behavior as primarily solitary, parallel, associative, or cooperative. Once prevailing tendencies are determined the task of intervention to move the child to the next level of play development begins.

Intervention Strategies

Selection of Activities

Activities should be selected that are appropriate for the stage of play development of participants. Since children with disabilities frequently have delayed play development, activities chosen initially should not require group participation. An early goal of intervention should be to have children play appropriately by themselves and to use toys or equipment in an appropriate manner. When such skills are mastered, the focus of intervention can turn to participation with one other child, then with two

children, and finally with a small group. Team competition is inappropriate at the preschool level. It is recommended that team competition not be introduced until third grade (Sherrill, 1986, p. 115). Practitioners should remember that play skill development is sequential and age related, but it is not age determined.

Activities should be

F unctional (of interest and aid in learning)
U seful (appropriate for developmental level)
N onthreatening (guarantee success)

Individualization of Instruction

Meeting needs of diverse groups of individuals demands use of individualized instruction. Contrary to misconceptions which have arisen, individualized instruction does not mean each instructor teaches one-on-one. Goals for maximizing achievement for each child mandate ensuring each child will have success. Several aspects of physical education and recreation activities can be varied to help each student maximize success. Activity leaders can vary format, learning environment, and objectives.

To vary format, try:

- *Individual Instruction.* Use classroom teachers, aides, and peers to allow each child to have individual attention.
- *Peer Tutors.* Use skilled children from the peer group or bring in older children to teach and assist with instruction.
- *Small Groups.* Have 3-4 children working together with a teacher, aide, or peer tutor.
- *Large Group.* Keep the entire group participating as a unit.
- *Mixed Groups.* Change from large group to small groups to a large group throughout the activity period.

To vary learning environment, try changing:

- *Equipment.* Have a variety of equipment available for different skill and ability levels (large and small balls, light and heavy rackets, regulation and Nerf equipment).
- *Space.* Redefine boundaries, heights, or amount of space to fit needs and abilities of participants.
- *Stations.* Have a variety of activities organized around an activity area and allow students to rotate to each one. Stations are excellent for warm-up or fitness activities as well as skill practice.

To vary learning objectives, try:

- *Diagnostic/Prescriptive Teaching.* Assess abilities of each individual and provide learning opportunities appropriate for each learner.
- *Task Cards.* Predeveloped learning materials are available (the I CAN program, for example [Wessel, 1980]) or task cards can be developed for various skills.
- *Contracts.* Involve children in setting goals for achievement. Draw up a contract for work to be accomplished within a set time frame.

Selection and Adaptation of Play Objects

A wide variety of needs should be considered when selecting objects for use in play, including:

- *Motor Needs.* Objects should be appropriate for motor skills of the child. For example, toys requiring manual dexterity or sustained pressure to operate would be inappropriate for a child with severe physical disability.
- *Sensory Needs.* Children with sensory disabilities need objects providing input to intact sensory systems. For example, children with visual disability may respond well to objects offering high tactile input.
- *Developmental Needs.* Children with cognitive or motor delays may not be able to effectively play with toys designed for their chronological age.
- *Normalization Needs.* Toys selected should be age appropriate. For example, a six-year-old child, functioning at the 18-month level, should not be given baby toys.
- *Program Needs.* Goals, environment, and budget must be considered in selecting play objects (adapted from Musselwhite, 1986, p. 35).

Resources for Toys

Toys for all children:

Toys to Grow On. P.O. Box 17, Long Beach, CA 09801; 1-800-542-8338.
Childcraft. 20 Kilmer Road, Edison, NJ 08818; 1-800-631-5657.
PlayFair Toys. 1690 28th Street, Boulder, CO 80301; 1-800-824-7255.
Music for Little People. Box 1460, Radway, CA 95560; 1-800-346-4445.
Metropolitan Museum of Art. 225 Gracie Station, New York, NY 10028.
Discovery Toys. 230 Arnold Drive, Suite 400, Martinez, CA 94553; 1-415-370-7575.

Toys for children with disabilities:

Kapable Kids. P.O. Box 250, Bohemia, NY 11718; 1-800-356-1564.
Special Toys 4 Special Kids. 1183 Wyandor Circle, Westminster, CO 80234; 1-303-460-9254.
Jesana Ltd. P.O. Box 17, Irvington, NY 10533; 1-800-443-4726.
Toys for Special Children Inc. 385 Warburton Ave., Hastings-on-Hudson, NY 10706; 1-914-478-0960.

Teaching Cooperative Play

"One common theme from literature reviews is that interaction cannot be expected between children with disabilities and their disabled or nondisabled peers without some intervention from adults" (Musselwhite, 1986). Cooperative play has to be taught to individuals with severe disabilities. General strategies for teaching cooperative play and social interaction include the following models and strategies.

Peer Interaction Models

- Pair a child with an adult leader; teach in a variety of play situations.
- Pair a child with a higher functioning, developmentally disabled peer who engage in appropriate play.
- Pair a child with a nondisabled peer who engages in appropriate play.
- Pair two equivalent (disabled) peers; have one or more leaders provide instruction.
- Integrate a group of children with disabilities with nondisabled peer group.
- Use any of the foregoing combinations, giving various types of reinforcement, such as edibles, points, or praise, for instances of cooperation.
- Manipulate the environment before play sessions by selecting toys, room size, or music to promote cooperative play (Wehman, 1977, p. 16).

Peer Interaction Strategies

Peer instruction strategies are summarized in the following chart, adapted from work by Musselwhite (1986, p. 91).

General Strategy	Sample Activities
Facilitate peer-play for traditional early childhood games; ideally, facilitators should be from various disciplines (PT, OT, etc.) to allow interdisciplinary cooperation (e.g., PT shows optimal positioning to allow ease of movement).	Peek-a-boo: Adult can sit behind one child and prompt each to hide the partner (e.g., with a blanket), to pull the blanket off at the appropriate time, and to point to the "discovered" partner. Pair-up Patty Cake: Adults can encourage children to pat each other's hands rather than an adult's.
Develop enticing play areas, similar to learning centers used for preschool children; toys or location can be altered to provide for children to use toys together.	Wall of toys: Affix objects to wall in a corner. Hide-out: Set a large box on its side and hang toys from the roolf and walls. Activity frame: Attach novel items to activity frame (e.g., in Tumbleform chairs)
Devise adapted games suitable for children with moderate physical disabilities	Pull-Apart: Cut two lengths of dowel, place small toys in plastic tubing that loosely fits over sticks, joining them together; when children pull ends, toys fall out. Push-it-down: One child sits on slide and pushes toys down to a peer at the bottom. Peer should request specific toys.
Develop adapted games suitable for children with severe physical disabilities.	Stack 'n Knock: Stack toys up and have children knock down (include noisemakers). Race Car Crash: Have children activate switch for remote control car to knock down blocks. Send-it-over: Attach small toys to roof of battery operated car; have one child send it to another.

Promoting Play Skill Development

The mixture of mature and immature play patterns displayed by many children with disabilities "suggests that the handicapped child would benefit from play models and materials which stimulate the most mature play levels of which the child is capable" (Rogers, 1988, p. 166). Research further indicates increased positive social interaction and more mature play are achieved when children with disabilities are placed in an integrated setting with nondisabled peers. Use of play models and peer helpers is one of the most effective methods of improving play skills. Such usage demands careful training and planning to provide an appropriate environment and set of expectations in order for each child to benefit.

After basic motor skills and play skills are evidenced, structure the environment to promote play skill development. Specific suggestions to structure the environment include:

- Choose activities which bring children together, e.g., sharing a defined area (sandbox) or setting of materials (blocks or play dough).
- Choose activities which create needs for children to interact (teeter totter, rocking boat).
- Use a limited number of materials so children are encouraged to share and trade.

Using appropriate teaching techniques is helpful:

- Follow the child's lead.
- Be flexible as to outcomes.
- Reinforce positive interactions.
- Acknowledge what the child is trying to do. Offer help if help is needed.
- Plan to decrease adult direction and interaction. Allow children to monitor their own play.

The essence of teaching a handicapped child to play is to keep a balance between structure and flexibility. Although you may have goals in mind, always be prepared to "cash in" on any initiative or interest the child displays. Because play is engendered and fostered by inventiveness, enjoyment, and surprise, an arid and rigid program where goals are always set for the children may teach them specific skills but will not teach them how to play for themselves in more informal settings. With slower children you may need to start by teaching specific skills but as soon as possible try to encourage them to use these skills in more informal settings for their own purposes (Riddick, 1982, p. 9).

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Play Equipment

James F. Cowart

Play is one means for a child to learn concepts, develop movement skills, and experience socialization. Play typically involves the use of equipment of one kind or another, and the purpose of this article is to briefly review three types of play equipment: pedal/push play vehicles, school play equipment, and toys, noting adaptions to accommodate the children with disabilities. As will be seen, some adaptions involve changing how equipment is used, while others will require modifying the equipment itself. Commercially made and home-made adaptions will be referenced. Additionally, reference will be given to instructional strategies for teaching the appropriate use of play equipment.

The first thing to look at are points to consider when adapting play equipment for use by children with disabilities.

Considerations When Adapting Play Equipment

Will the adaption help the student achieve his/her current goals and objectives? The play skills emphasized should be related to the child's goals and objectives. If play equipment is involved, adjustments are made as necessary for the students to successfully move toward achievement of their own goals and objectives.

Is the adaption within the student's ability range? An adaption should assist a student to participate successfully in planned activities within his/her ability range. As a student's skill increases, it may be necessary to modify the adaption further, or eliminate it, to encourage continued progress in student development.

Is the adaption constructed safely? In planning and constructing a device adaption, student safety must be uppermost in a teacher's mind. An adaption should encourage student participation, yet be safe for the user as well as other pupils with whom he/she participates.

Is the adaption appropriate to the student's age and interest? Each student should have an opportunity to develop and use his/her abilities and personal interests. Since participation with nondisabled peers is a common desire, adaptions should be planned to encourage and allow this type of participation.

For additional items to consider relating to play equipment adaption, refer to Musselwhite (1986) and Wehman (1979a).

Pedal/Push Play Vehicles

In the past a major problem with commercially made pedal or push play vehicles was their lack of availability for children with disabilities. When equipment adaptions were considered, these adjustments were generally made by school staff, parents, friends, or volunteers. Some more common adaptions were constructed to assist a student to

maintain trunk control, retain foot contact with pedals, or to utilize upper limbs when lower limbs were nonfunctional. Good commercial adaptions are now readily available.

Following are brief statements highlighting areas of nonfunctionality, followed by a listing of companies distributing commercial adaptions. Instructional strategies to assist the student to learn to pedal or push a wheeled play vehicle conclude the section.

Lack of trunk control. A back support secured to a tricycle frame and seat is one adaption used to help a child maintain a safe and secure position (Illustration #1). For students needing more stability, a tricycle with a low seat and a wide wheel base provides necessary assistance (Illustration #2).

Illustration #1
Back support secured to tricycle frame and seat.

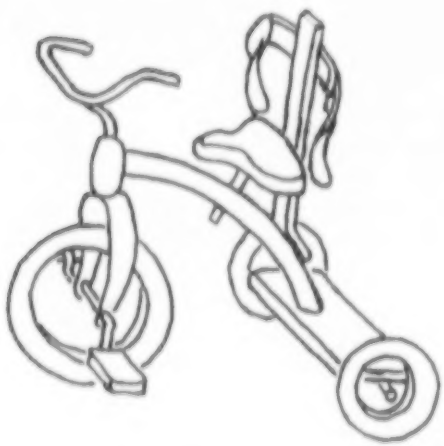
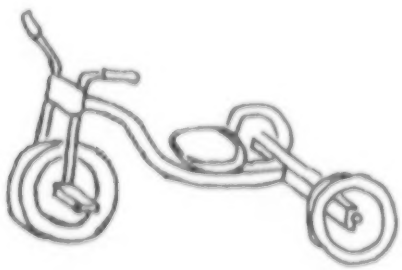


Illustration #2
Low seat with wide base of support for increased stability.

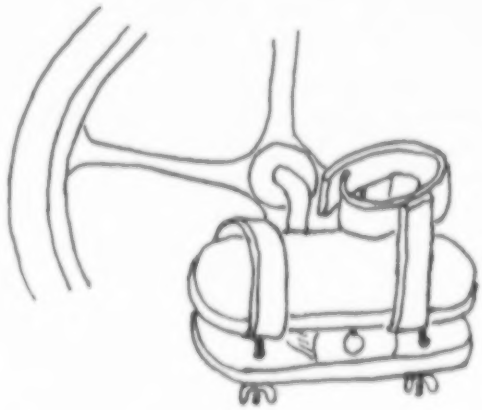


Commercially made equipment meeting this need include the following:

Safe-T-Trike (Flaghouse)
Lo-Boy Trike (Flaghouse, Preston)
Tricycle Trunk Support (Preston)

Inability to maintain foot contact with the pedals. Some students lack physical and/or mental ability to initially maintain foot contact with tricycle pedals. Foot supports (Illustration #3) mounted to pedals have allowed pupils to retain contact and actively pedal a tricycle or learn pedaling sequence.

Illustration #3
Foot support mounted to tricycle pedal.



Commercially made equipment meeting this need include the following:

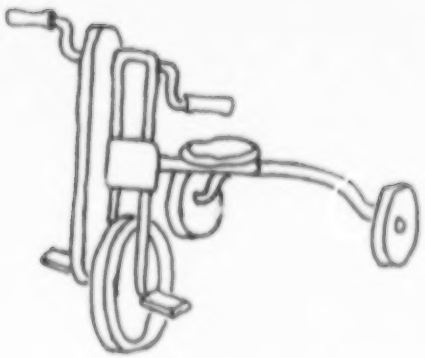
Foot Support Blocks (Flaghouse)
Tricycle Foot Harness (Preston)

Inability to use or control lower limbs. A hand driven tricycle (Illustration #4, next page) was developed for students unable to use their lower limbs but with normal function of the upper body.

Commercially made vehicles meeting this need include the following:

Hand-Drive Tricycle (Preston)
Star Car (Flaghouse, Preston)
Whirl-A-Wheel (Preston, Flaghouse)
Hand-Pump-Irish Mail (Flaghouse)

Illustration #4
Hand-drive tricycle.

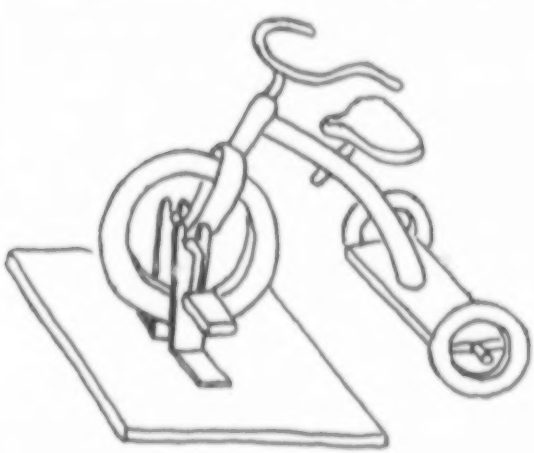


Skill Instruction Strategies

Students sometimes need to be taught to use wheeled play vehicles appropriately. For example, a six-year old severely retarded child was interested in a small tricycle but would only stand by it and touch the pedals, handle bars, etc. Attempts were made by the adapted physical education teacher and classroom instructor to place the child on the tricycle and have him pedal. However, the child would immediately get off and again stand beside the tricycle.

On reviewing the literature, an article by Peterson and McIntosh (1973) was found that made reference to an automated exercycle used to develop appropriate pedaling behavior. With this idea in mind, an adaption was made (illustration #5) to support the front wheel, allowing it to turn freely. Foot supports were secured to the pedals to keep the child's feet on the pedals. In addition, a back support was added to help the child maintain a stable seat position. Then a behavior approach (Popovich, 1981; Sulzer-Azaroff and Mayer, 1991) was used to teach the child the pedaling sequence. After several months of instruction, the child was able to enthusiastically pedal the tricycle on the playground.

Illustration #5
Front wheel support for stationary pedaling.



School Play Equipment

Most elementary schools use play equipment to develop movement and manipulative skills. This equipment usually includes hoops, beanbags, balls, scooter boards, wands, etc. Typically, it is not necessary to alter school play equipment to accommodate most disabled children. Adaptions in these cases are generally related to the way the equipment is used and/or the conditions under which it is used. When the teacher believes a change may be necessary to accommodate a disabled child, consider the following questions:

What are the pupil's capabilities?

What are the skills needed in order for the child to perform the task?

Once answers to these questions are determined, the instructor is in a better position to successfully include the student in the activity. Initially it may be helpful to try adjustments to see if they are appropriate. If there is still a problem, further modification can be made until the child is able to participate safely, successfully, and with satisfaction. The chart on the next page lists some popular pieces of school play equipment with examples of their use and suggested adaptions for children who are wheelchair-bound and visually impaired.

Following are references containing accommodations the author has used to assist more severely wheelchair-bound and visually impaired children to utilize school play equipment:

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Examples of Accommodations for Use of School Play Equipment

Play Equipment	*Use*	*Student Limitation*	*Possible Adaption*
Beanbag	Can you hold the beanbag between your knees and jump?	W-B	• Student places beanbag between knees and pushes him/herself.
		VI	• Teacher uses beeper, voice, etc. as directional cue for pupil.
	Can you make a long throw, run, and pick it up?	W-B	• Student pushes him/herself to beanbag location
		VI	• Teacher uses voice as directional cue for student.
Hula Hoop	Can you move around a hoop using different locomotor skills (jump, hop, etc.)?	W-B	• Student pushes him/herself around hoop (forward, back, etc.); sits on floor and pulls self around hoop (prone, supine, etc.).
		VI	• Hoop is taped to floor to prevent it from sliding as pupil moves around it using feet as tactile guide.
	Can you roll your hoop and keep it from falling over?	W-B	• Student rolls hoop while being pushed by another student; rolls hoop, pushes wheelchair to catch hoop, and repeats task.
		VI	• After rolling hoop, student keeps hand lightly in contact with hoop as he/she recovers the hand for the next push.
Scooter Board	Can you pull yourself down to the cone and return to the starting line?	W-B	• Student uses two scooter boards if he/she lacks control of lower legs.
		VI	• Beeper, edge of mat, wall, etc., is used as directional cue for the student.

W-B Wheelchair-bound
VI Visually impaired

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Toys

Some children are unable to spontaneously and independently play with commercially made toys. These toys often require motor coordination and strength beyond the child's capabilities. When this occurs, adapted physical education instructors may take one of three steps: find another toy appropriate to the student's capabilities, design and make a new toy (Van de Bos and Lear offer ideas for making new toys utilizing a child's favorite sounds, shapes, colors, etc.), or adapt a commercial toy to make it more accessible to the child with a disability.

By modifying play equipment or changing the conditions under which it is used, a situation can be created allowing the child with a disability opportunities to successfully play with a toy. Schaeffler (1988) notes a number of ways to enhance active use of toys by students with disabilities. These include stabilizing the toy for easier access; constructing a framework to restrict the movement of moveable toys; using aids to grasp and/or hold toys; and utilizing switches to activate battery operated toys. The emphasis of this section will be related to switches and adapted toys.

Switches allow a child with minimal movements of his/her hands to play with a toy. An advantage of this early training with switches is preparation for transition to the use of modern electronic devices for mobility, daily living, and work.

When considering using a switch with a severely disabled child, the author worked closely with the school district's physical therapist, along with referring to resources such as Finnie's book, *Handling the Young Cerebral Palsied Child at Home* (1975). The intent was to determine the best position for the child to maximize his/her capabilities and provide the best opportunity to visually focus on the toy. Next, thought was given to the type of switch to best encourage the child's play skills. Efforts centered on locating, purchasing, or making a switch to meet the child's needs. A variety of opportunities presented themselves:

Commercially made switches and adapted toys. Commercially made switches are now available in such variety that it is possible for almost any child to interact with toys in spite of the severity of disability. In addition, toys have been adapted to respond to an activated switch. If school funds are available, there are a number of sources: Toys for Special Children, Therapeutic Toys Inc., Able Net Inc., and Crestwood Co.

Home-made switches and adapted toys. An abundance of do-it-yourself books provide specific instructions for modifying battery operated toys and constructing switches: e.g., Burkhart (1982a & 1982b), Musselwhite (1986), and French, Folsom-Meek, Cook, and Smith (1987). The author, a novice at switch construction, sought help from a local chapter of the Telephone Pioneers of America. Members from this organization came to the school and demonstrated to the staff how to adapt toys and construct switches. This may be another source of assistance.

Toy loan library. When parents of children with disabilities cannot afford to purchase adapted toys and/or switches, or feel they lack the ability to construct them, involvement with a toy loan library may be the answer to their needs. Toy loan libraries have been in existence in the United States for a number of years. One of the loan library's services is to bring specially designed toys and/or switches within the reach of any family with a disabled child. One such nonprofit organization in the San Francisco Bay area is the Alliance for Technology Access, an affiliate of the Foundation for Technology. The Foundation has affiliates in 35 states. Members pay a minimal fee to check out adapted toys for a few weeks before returning them. Another nonprofit organization with

a similar program is Lekotek, with locations in several states. Lekotek is often associated with Easter Seal Society chapters or local school districts. Either organization can be contacted for further information.

Skill Instruction Strategies

Some disabled children are unable to appropriately interact with toys even though they may have the capability. These children often do not learn by verbal description, initiation, etc., but need to be taught specific skills using a behavior management program. Wehman (1979b) has written a helpful article dealing with instructional strategies to improve toy play skills. Musselwhite (1986) and Burkhart (1982b) include information related to instructional strategies for teaching toy play skills to the disabled child.

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Play Equipment Vendors

Able Net, Inc.
1081 Tenth Avenue, S.E.
Minneapolis, MN 55414-1312

Crestwood Co.
6625 North Sidney Place
Milwaukee, WI 53209

Flaghouse, Inc.
150 North MacQuesten Parkway
Mt. Vernon, NY 10550

Preston Corporation
Department 1052
P.O. Box 3697
Grand Rapids, MI 49501-3697

Therapeutic Toys, Inc.
P.O. Box 418
Moodus, CT 06469

Things from Bell
2096 S. Church St.
P.O. Box 135
East Troy, WI 53120

Toys for Special Children
385 Warburton Avenue
Hastings-On-Hudson, NY 10706

Loan Libraries

Foundation for Technology
Albany, CA
(510) 528-0747

Lekotek
Evanston, IL
(708) 328-0001

Project SIMPLE: Activities for Individuals with Sensory Impairments and Multihandicaps

Lauren Lieberman

The games and activities presented in this article were developed for students who are deaf, blind, deaf/blind, deaf multihandicapped, and blind multihandicapped. These activities have been used in many situations and they work! Their use in the Perkins School for the Blind Project SIMPLE (Sensory Impaired and Multihandicapped in Physical and Leisure Education) has provided a great opportunity to find out what works, what turns students on to activity as well as what frustrates them, and, most of all, what activities best aid learning.

Games and activities included here are arranged in a developmental sequence, beginning with locomotor skills and ending with fitness and recreation. It is important to teach functional activities. Using a hands-on approach, especially with totally blind students or students with cerebral palsy, gives them ideas of what you are looking for.

Individuals with sensory and/or multiple disabilities are unique in their abilities. Each person can be successful in any game or activity. Often a student is identified deaf/blind, yet they may have some usable hearing and vision. It is important for physical education specialists to know what degree of hearing and vision a student has in order to plan activities for individuals. It is up to leaders to find the safest and most challenging adaptations to enhance participant success. These games and activities are just a few ways to meet individual needs. Use them as a base and keep thinking of new ways to challenge your students' abilities. Remember ... physical education is a place to grow.

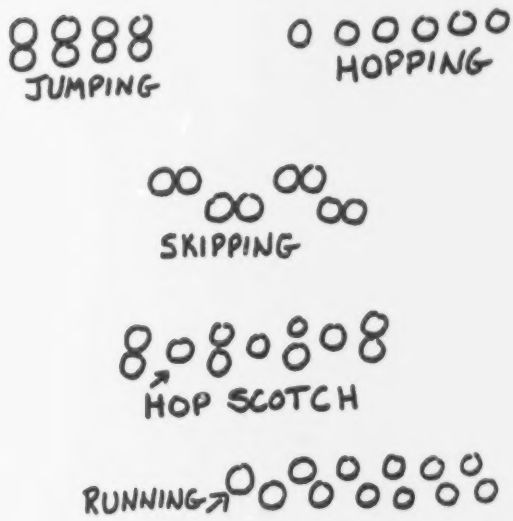
Locomotor Skills

The following games and activities were developed for students from preschool age to about age 6. They enhance developmental locomotor skills and movement skills such as rolling, crawling, creeping, running, hopping, skipping, jumping, sidestepping, and galloping. It is important to keep in mind that all students develop at different paces. Adapt to students' abilities. If a class has students at three different levels, all the students may be working on the same outcome, collecting all the apples (beanbags), for example, yet one will crawl, one will run, and one will skip. Give them a challenge yet do not frustrate them.

Footprints. Place cutout footprints of any material in different locomotor skill patterns so students can follow the footprints and understand different locomotor skills. If the floor is dark, use light colored material. If the floor is light, use a dark colored material. Some students may

be more successful in bare feet, socks, or with a fabric with more sensory feedback.

Hula Hoop. Place hula hoops in different locomotor skill patterns. Students follow hula hoops and gain better understanding of requested locomotor skill patterns. For example:



Use smaller hula hoops for students with shorter jumps or hops.

Tandem Walkers. Two long boards (similar to short fat skis) with Velcro straps to hold feet. The teacher stands on the front of the boards, and the student stands on the back, holding onto the teacher's waist. The teacher then goes through different locomotor skill patterns. The student follows along and feels the difference between patterns. These can also be used for rhythm activities, as well as dance steps. It gives the student double feedback if the teacher moves a hand when stepping with the foot (e.g., lifting the left hand up when stepping with right foot, and right hand when stepping with left foot). This hand-foot opposition will facilitate an appropriate walking pattern.

Bottle Caps. The student and teacher each tape bottle caps to their feet. The teacher performs a chosen locomotor skill making a distinct sound pattern with the bottle caps. The student imitates the sound, which hopefully results in the chosen locomotor skill. Students can make up their own sound patterns and a game of follow the leader can result.

Stage/Wooden Floor. This idea uses the same concept as bottle caps. The teacher performs a chosen locomotor skill, making a sound pattern and vibrations on a wooden floor. The student then tries to imitate the sound pattern, resulting in the chosen locomotor skill.

String/Guidewire. Students follow a string or guidewire so they can independently and safely practice locomotor skills. Students hold on to a loop of rope attached to the wire. Their arms should move while executing patterns. A flag or bright piece of tape should be tied to the rope 4-5 feet from the end to signal the end of the rope, and where to stop and turn around.

Trampoline or Rebounder. Students who have difficulty with the concept of jumping can jump on a trampoline or rebounder, then transfer the idea to the floor and successfully jump. It is important when using a large trampoline to use spotters (at least four) and a safety belt. Participants will then have less fear, try more skills, and be safe!

Pool. If the student has a balance problem, or lack of self-confidence, a locomotor skill can be taught in the pool, then later transferred to land. In the pool the student may feel safer because buoyancy will help their balance. Performing locomotor skills will also be easier with less fear of falling. Students can hold on to the wall, use a flotation device, or perform the skill independently.

Bell Balloons. If a student knows one or more locomotor skills, yet lacks a reason to move, give them a bell balloon, and tell them to keep the balloon moving on the floor while moving in a certain locomotor skill pattern. Give each student a different color so they know which balloon is theirs. Bell balloons are made by taking a balloon or punch ball, put 2-3 small bells inside, blow up, and tie. The sound of the bells ringing while the balloon is moving is motivating to students and will help them track the balloon. For a student who is totally blind, tying a 3-5 foot string to their ankle and to the balloon will help with their direction to the balloon after the bells stop ringing.

Bright Objects. Bright objects such as bean bags or foam shapes are another motivating reason to move. "Who can pick up the green bean bags while hopping? Who can pick up all the foam circles while running?" A specific movement pattern can be tied to a particular shape or color. Light bright objects on a darker wooden floor are more stimulating. Darker brighter objects on a light floor stimulate. Students may have different color needs depending upon their vision. They can be asked which colors they see best!

Obstacle Courses. Use footprints, hula hoops, bean bags, a rebounder, and any other materials that promote going from one locomotor skill to another. They can facilitate learning how to change from one locomotor skill to another. By arranging different locomotor skill activities in a row, students will understand what skill is to be performed and understand the difference in the skills (e.g., hopping on the footprints, jumping on the rebounder, skipping through the hoops, and running to the yellow bean bags).

Four Foot Shapes. Cut large shapes such as a square, triangle, circle, and diamond from thick cardboard. Stand them with perpendicular cardboard slats and paint them bright colors. This is great incentive for any student to move no matter what the ability. This will teach them shapes, colors, going through or around, and movement patterns. Students move to the shape or the color using different locomotor skill patterns. "Skip to the circle, sidestep to the square, and run to the triangle." This activity can also be used for 3-4 part command practice.

Pregame Skills

This section focuses on activities for students from elementary age to middle school age. For younger students whole units can focus on different pregame skills. These skills can also be used as lead-up activities for actual game skill units or for just fun activities to enhance eye-hand and eye-foot coordination.

Pregame skills are prerequisites to game skills such as throwing, catching, kicking, batting, racquet skills, and bouncing a ball. Use these activities as a base and adapt each for individual student needs.

Sockley. Take a string, pull it tightly across a room. Hang a second string from it (attached with a paperclip so the hanging string slides across the horizontal string). Attach a soft ball to the hanging string. The ball and vertical string should easily slide across the horizontal string. Students can practice hitting the ball with an underhand or overhand throwing motion, or practice a kicking motion depending upon the height of the ball. This can be for fun or for points in the game of Sockley (Marsallo, 1983).

Streamers. Attach to the end of a paint stirrer or a ruler some crepe paper, fabric, or a long strip of mylar the height of the student. With colorful streamers students can be encouraged to imitate an overhand throw or underhand throw pattern and make beautiful designs at the same time. Students will go through full range of motion and follow-through and not even know they are working on these skills. Flaghouse (1-800-221-5185) markets a 1' string attached to a ball with long colorful streamer for the same effect.

Targets. Have students make their own targets according to a unit they are working on in the classroom. For example, if the class is working on harvesting, they may make an apple tree with holes where the apples should be. Students then throw red bean bags, representing apples, through the holes for points or for fun. They will be enthusiastic about throwing, kicking, or batting at that target. The harder the student needs to throw the more mature the throwing pattern must be. The softer they need to throw, the less mature the throwing pattern can be.

Targets with Sensory Rewards. Use an ABLE NET (1-800-322-0956) switch system to connect a radio, light, or fan (depending upon the usable sense) to the target. This way the student will have positive feedback when hitting the target. When the student hits the designated area, whether it is an overhand throw, kick, or underhand throw, they will have sensory feedback.

Hula Hoop Roll. To reinforce the underhand throw motion students roll a hula hoop to a wall or partner. Students should place hand on hoop palm down, step with opposite leg, and execute roll with follow through for the most accurate throw. Play in pairs, or in a circle with more than one hula hoop.

Bowling. Either informal bowling in the gym or at a bowling alley is a great way to reinforce the underhand throwing pattern.

Ball on a String. The student holds one end of a string or rope with a playground type ball attached to the other end. The student can practice the process of a kick with no target, have control over where the ball goes, and be independent at the same time. This is a good system for students with sensory impairments because they have the feedback not only from a kick, but from the pull of the string in their hand. A good system is called Boom Balls from Sportime (1-800-283-5700).

Suspended Ball on a String. A tennis or yarn ball is hung from the ceiling or a horizontal bar. Two students can play catch over or underhand throwing and catching with control. No one has to go chasing the ball.

Bell Ball Bash. Bell balls can be used to promote kicking. If the students kick in partners a bell ball will be easy to find.

Beach/Medicine Balls. Beach balls and medicine balls are great equipment in a kicking unit because they are large and bright, and the student will get more feedback from the kick. For blind students, the lighter the ball the more difficulty they have in finding the ball and knowing when they have kicked the ball. The heavier the ball, the more feedback they have from the kick and they feel more success. Use a large playground ball, therapy ball, or medicine ball when kicking with blind students. Be sure the kick used with a medicine ball is a side of the foot kick to avoid injuries to the foot and ankle.

Moving Auditory Target. Once students have acquired the skills of underhand throw, overhand throw, and kick, they can practice these new skills by throwing and kicking at a moving target such as a box (with nothing inside), a ball, or another student. Targets can be auditory in many ways. Have a student in a box moving and making noise (be sure the balls are not too hard). Attach bells or a beeper to the target. Cans on a string can be attached to the moving box similar to a bride's car after a wedding. What motivates your students best?

Hand Paddle. At the start of a racquet skills unit the teacher can promote success by having the student use a hand paddle with two strips of elastic pulled across one side. Attach the paddle directly to the palm of the hand and have them hit underhand, overhand, and sidearm, to get the feel of the swing, yet have more control over the paddle.

Nylon Racquets. A nylon racquet is the next step in a series of activities for a racquet skills unit, or just a fun game for eye-hand coordination. Using a hanger bent into the shape of a racquet, pull the leg of a pantyhose over the frame to make a racquet. Wrap tape around end of racquet for better grip and to protect the hand from loose end of hanger. Use the short racquet with a balloon or a nerf ball tied to the handle. Play in partners. There are endless activities to do with nylon racquets.

Cardboard Racquets. Students who have little upper arm strength, or who are self-abusive, can use these racquets. Just cut a racquet shape out of thick cardboard, and tape or paint it for brightness and protection. You have a cheap, safe racquet that gives plenty of sensory feedback. These racquets can be cut small or large depending upon the abilities of the participants.

Slo Mo Ball Bounce. The brand of ball called Slo Mo ball is a good ball to practice catching because it is very soft and slow. Bouncing the ball to the student is a good way to successfully introduce catching. Slo Mo balls are a product of Sportime (1-800-283-5700); they come in many sizes.

Tennis Ball in Tube Sock. Using a tennis ball in a sock is great for catching because there is more time to catch the ball. It is also a good alternative to throwing a ball because students can get a good grip on the sock, and work on their release time in the throw. If a white tube sock is tie dyed a bright color students with low vision can see better, and students with short attention spans will attend longer.

Steal the Soccer Ball. This game is played with the same rules as Steal the Bacon. A number is called and the two students come to the middle where there are *two* balls. Each student has to try to get their ball over a designated line, 5-20 feet away (depending upon the ability of the students). The student who gets the ball over the designated line first is the winner; this game can be played with no scoring.

Rhythms

This section focuses on different methods of enhancing rhythms, movement, and dance. Rhythms are a great reinforcer of locomotor skills, balance, and fitness. The activities can be used as part of a dance unit, recreation, or just part of the student's socialization time.

Streamers. Take a paint stirrer or paper towel tube and attach some crepe paper or streamers. Have students make circles, eights, or waves. This is ideal for arm strength, flexibility, and working on differences in planes. Rhythm can be incorporated by music, clapping, momentum of the streamers, or marching.

Lights. Turn the lights on and off in a rhythm in which you want the students to move. Ask students to move to the light pattern. CAUTION: This could set some students into seizure activity; be sure to read the students' medical files before trying this idea.

Tandem Walkers. Use tandem walkers (described earlier) to promote rhythm in students' gait. Then let them try the same rhythm without the tandem walkers.

Stage/Wooden Floor. Use a stage or wooden floor for rhythms, in the same manner used to promote locomotor skills as described earlier.

Feeling/Imitation. Allow the student to listen or feel the teacher or another successful student doing the rhythm pattern correctly. This can be done with different clapping patterns, marching, tapping knees, sitting and tapping the floor, or clapping the students' hands. Have the student do the same.

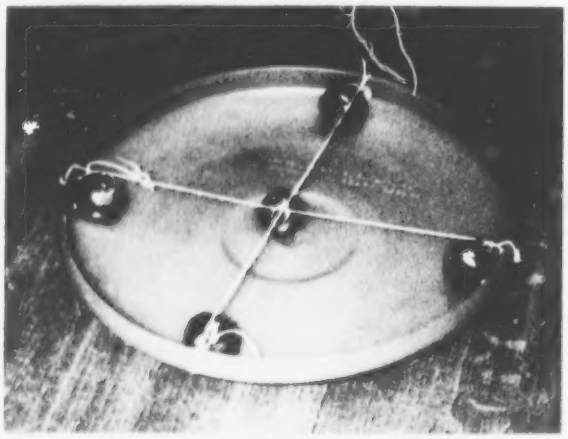
Cardboard Tubes/Wooden Blocks. Have students march tapping or clapping cardboard tubes or wooden blocks to either a predetermined beat or their own beat. It can be fast or slow, or a combination; students can march high or low or a combination.

Instruments. Give each student a different instrument, such as a drum, tambourine, cymbal, or xylophone. Students can play the instrument to a predetermined beat, or imagine their own beat. Have them move to the beat. Let them try different instruments. Let students create their own movement patterns to the beat. Can they move to the rhythms in different directions? In different planes? Have one student be the leader and other students follow the beat. Take turns being the leader and marching in different rhythms. Let them be creative.

Game Skills

Individuals with sensory or multiple disabilities can partake in all the same sports as their able-bodied peers. Physical educators, recreation leaders, teachers, and parents must strive to make the necessary adaptations to facilitate success for students, yet offer them a challenge. In most cases merely changing the texture of the playing object, making the object brighter, louder, slower, bigger, or increasing the tactile cues enhances successful participation.

Frisbee Bell Hockey. Take a frisbee, tie a fishing line with bells attached to it across the open bottom of the frisbee (cut small holes in the lip of the frisbee and tie the string through the holes). Play a game of floor hockey with the frisbee. In this game participants should be more successful because the target is much bigger and brighter, it moves slower, and it emits more noise than a regular puck or ball.



Kickball. Kickball can be modified with each student kicking a stationary ball, students in the field having a sighted guide, and/or using a bell ball or beep ball if necessary.

Baseball. Baseball can be modified using an auditory ball, batting from a tee stand, running with sighted guides, or batting with plastic or foam bats. Out, run, and inning rules may be modified to meet participant's needs.

Soccer. Soccer can be modified by using a larger ball, decreasing the number of players, making zones and having people stay in those zones, using a ball with a sound source, or using a certain number of people with a sideline. Using a large therapy ball the students take more initiative, because it is brighter and softer, it moves slower, and they rarely miss.

Goal Ball. This game is already modified for the blind and can be adapted to the deaf/blind by just tapping the shoulder of the deaf/blind student on the side the ball is approaching, hard if the ball is a far dive to stop, or soft if they need to fall right where they are. The number of students can also be reduced to two or one per team as needed.

Volleyball. This game may be modified using a slower ball such as a Slo Mo ball, a punch ball, beach ball, or even a balloon with bells inside. Number of players may be increased, decreased, or the role of players modified (some players can hit the ball twice, the ball can hit the ground once, or students catch the ball instead of hitting it). The ball can be tied to the net with a string for more control.

Frisbee Golf. This is golf played with thrown frisbees instead of golf balls and clubs. The golf cup can be big orange bicycle flags stuck in the ground with hula hoops around them. Play 2 holes up to 18 depending upon needs of the students. The frisbee can be tossed, thrown, or flung depending upon abilities of the participants. Play for fun, or keep score. Par 3 works best.

Modified Golfing Practice. Materials needed for this are golf club, golf ball, and a fishing reel. The reel is attached to the shaft of the golf club (by hot glue, far enough down so the student can reach the reel) and the fishing line is attached to the golf ball by a screw (drill a small hole in the ball, then screw in the screw). A blind or visually impaired student can work on their golf swing and then reel the ball back in and try again independently. This idea was developed by Joel Zemba from the West Virginia School for the Blind (when he was 14 years old).

Basketball. Modify basketball by slowing down the game and talking the student through dribbling, passing (bounce passes tend to be most successful), and shooting. Feedback is the key to success, and changing the number of players, role of players, or size of the court will also help. For students who are blind, a metronome can be placed behind the basket, and bells can be tied to the net of the basket for immediate feedback.

Football. Football can be modified by using a beeping football to practice kicking, running, throwing, catching, and passing. The game can be slowed down and modified to individual participant abilities.

Fitness

At any age, fitness plays an important part in life. Individuals with sensory impairments are no exception. They can and should participate in all forms of fitness. The following are only a few.

The greatest barrier to fitness is motivation. Many individuals can not see or hear for motivation. What do we do? All students have a favorite form of fitness; it is a professional's job to find out what it is and how to facilitate that motivation.

Running/Walking. A guidewire, sighted guide, direction caller, or bright lines on the floor will promote direction and motivation for individuals who are deaf and/or blind. Charts, maps, and flip counters will give them some idea of their progress. Flip cards can be made out of index cards and rings; for the student with visual impairment numbers can be made larger and use stickey wickey or high marks to raise the numbers.

Tandem/Stationary Bicycling. Most individuals who are deaf and blind love the feel of motion so motivation may not be a problem. The difficulty is relaying a distance or time. This may be done with charts, maps, a clock showing how much time they rode, or a flip counter. Try a variety of methods until a meaningful system is found.

Cross Country Skiing. This is a great outdoor activity for winter. The only modifications are tracks, or verbal sighted guide, and for the real beginner maybe tandem skis.

Water Exercise. A modification the student may need is a tap when they reach the wall or the use of a sighted guide. For motivation, count the laps and make charts of improvement. Timing the student and improving on time is also a motivator. Any locomotor activity performed on land increases fitness potential when performed in resistance to the water.

Weight Lifting. Students may need to feel the instructor, or imitate the instructor. Not many modifications are needed. Be sure to teach good posture as a way to prevent injury. Charts and graphs of progress are good incentives to any weight program.

Aerobics. When teaching aerobics, it is important to start out teaching movement without music so the participant understands what is expected and does it successfully before music is added. It is also important to stay with a certain routine for a period of time until the participant masters that routine and feels successful. Feeling and imitation are good ways to facilitate correct safe movements.

Rollerskating. Skating is a scary activity for someone who is deaf/blind, yet they really love the motion. Set cones up in corners, put mats in front of walls, use sighted guide, use a skate aide (walker on wheels), or a large trash can on wheels for support and protection. When skating is mastered, the student can be timed or laps counted for incentive to skate for fitness. For the student who has some hearing, what better incentive than music.

Circuits. This can be any combination of fitness activities done one after another. Fitness cards can be done in

braille and with diagrams of a person performing desired activities. Participants can challenge themselves by increasing repetitions at each station or by increasing the number of times through the entire circuit or both. Blind students may need a sighted guide, a wall, or a guidewire from station to station.

Recreation

When individuals with disabilities are finished with school, they may be working, living in a group home, or both. What will they do in their free time? It is important they have some recreational activities to keep themselves fit and make them feel good about their bodies, activities they can do for the rest of their lives, activities they can do with other people.

The following sampleactivities are similar, if not the same, as the original recreational activity.

Bell Balloon Ping Pong. This game works best if participants have some usable vision. It is simply ping pong played with a bright balloon with bells inside. Doubles may be played as well. Rules may be modified for factors such as number of bounces and landing area.

Sockley. This game, described in the pregames section, is a great game to set up in a residential setting for residents to pick up and play independently. It is also one of the few games students in wheelchairs can play with their ambulatory peers. Change the number of players or the position of players to ensure success (Marsallo, 1983).

Tether Ball. Tether ball can be an indoor or outdoor game. It can be modified by putting a softer ball at the end of the rope, putting bells in the ball, adjusting the length of the rope, or giving assistance. Rules can also be modified. Tether ball is a great game for a student in a wheelchair to play with an ambulatory student.

Auditory Bowling. This game is simple and inexpensive. Take 3-5 gallon milk cartons, fill one with one cup of water, one will have 4 or 5 small bells inside, one with sand, one with macaroni (dry) or dirt, or one without anything inside. Participants bowl to milk cartons. If they hit one a distance of say one foot, they get 5 points, and if they know what is inside the carton they get 5 more points. Repeat until all cartons are hit at that distance. This activity will enhance the underhand throw motion, work on bowling skills, auditory discrimination, and maybe even some math. Be creative about what to put inside the milk jugs. If the student has no hearing then use different colors, letters, or numbers for additional points.

Parachute. Manipulating a parachute is a great way for students to work on locomotor skills, arm strength, laterality, plane differences, socialization, or just have fun. No particular modifications are needed.

Relay Races. This is an exciting fast-moving activity, which can be modified to abilities of individuals. Sighted guides, guidewires, a sound source, or just a bright flag will keep students moving. Scooters will keep activity exciting whether for class or just for fun.

Tactile Twister. For individuals who are deaf and blind, Milton Bradlee's game "Twister" with the colors and circles is not particularly successful. Instead, take a bed sheet, mark one row of circles, one of stars, one of squares, and one row of triangles. Glue (be sure to use flexible glue) glitter to the outline of the shape. This makes a tactile twister game great for working on flexibility, laterality, socialization, and fun. Use a spinner or cards (with braille if needed) to explain commands.

Rollerskating. With the modifications stated in the fitness section, rollerskating is a great recreational activity. When skating for recreation and not just for fitness, skaters can go through obstacle courses consisting of under, around, through, in, out, and over, or skate with partners to make the activity a social as well as recreational one.

Golfing. With or without the modifications listed in the game skills section, golf is a super recreational activity.

Scooter Soccer. This is a game similar to soccer, but the participants play seated on scooters while using their feet to kick. The playing court can be modified, the ball can be modified, the way the participants move can be modified, or the rules played can be modified, as long as the game is adapted to the individual.

Horseshoes. Horseshoes is a good way to increase success of the individual. In this recreational activity increase the number of stakes from 1 to 5, 10, or 15 depending upon the need. The more stakes, the increased success of the student. The distance can be modified, the way the student throws can be modified, and the scoring can be modified to challenge the student yet promote success. Horseshoes touching the stake earn 5 points, those leaning on the stake earn 10, and ringers 20 points. Participants keep their own score to increase math skills. The stakes can be tapped for an auditory cue. Wooden or metal stakes can be used.

Shuffleboard. This is especially good for individuals in wheelchairs. Modifications include changes in distance, in size of the scoreboard brightness, and in thickness of the lines, or points per section. A sound source can be given, and a hint as to where the other plates are for both teams. It can be competitive with tournaments or played for fun.

Unicycling. This is a challenging activity for anyone. Be sure riders wear helmets. Start out with support on both sides of the rider (on one side, a leader holding the hand, and on the other, the rider can hold on to a wall). When riders feel more confident, they can push off the wall and ride on their own. For riders having some sight, riding can be around a lined track. Know your riders' limits. Riding during fatigue or frustration may result in injury.

Table Games for Leisure and Education

Susan J. Grosse

This article is designed to assist education and recreation professionals in selecting and teaching leisure activity skills, specifically those skills used in table games, to individuals with disabilities. Most individuals learn to play table games as young children playing with families and friends. This learning situation implies several factors: that family and/or friends play table games together and that they are capable of teaching a game to the individual with a disability. It is fairly easy for a nondisabled child to acquire appropriate leisure skills through family and peer interactions.

The child with a disability, who may already need special assistance with learning, however, may also require special assistance learning leisure skills. Family members and peers may or may not be able to provide this assistance.

Many children with disabilities are included in family or peer groups for games. But are they independent players or do they just watch as someone plays their hand or position for them?

Appropriate use of leisure means participation with independence. It is hoped this article will provide information and encouragement to facilitate use of table games for both educational and leisure purposes, so that individuals with disabilities can truly develop the skills needed to participate in table games as independent leisure selections.

Value of Table Games

Table games can be used in both educational and recreational settings. Using table games in the classroom can aid learning academic skills as children apply academic skills to game situations. Math skills such as number recognition, counting, adding, and subtracting; reading skills; matching; memory; concept areas such as buying and selling, handling money, following a story, and participating in "real life" situations are only a few of many skill areas represented. Academic skills may be reinforced, but also, the fun of playing the game can serve as a motivator to learn higher level skills and reward both mastery of skills themselves as well as effort put forth in the process.

Table games can also reinforce concepts learned in physical education classes. Many table games have sport themes such as basketball, football, or bowling. Participants can learn more about sports without having to participate physically. For students having difficulty in learning game rules and performing physical skills at the same time, this can be very important. Everyone should learn to participate and compete with others. In these processes table games can be of particular value to an individual who is not especially interested in more active games and sport competitions.

Table games can also be therapeutic, particularly for fine motor skills. Most physical skills needed to participate in table games are fine motor skills. Grasp and release, hand control, and small finger/hand/arm movements can all be improved as individuals with fine motor problems play a game requiring finger/hand use. Perceptual motor skills are tapped as players match items, manipulate game pieces in space, move tokens in particular directions, follow instructions, identify objects, visually follow game actions, and perform cognitive tasks. Enjoyment of playing a table game can make therapy a much more pleasant experience.

Though use of table games in education is important, use in recreation is imperative. If individuals with disabilities do not learn table games in a recreational setting they probably will not learn them at all. Once learned, table games provide a means of utilizing leisure time in an enjoyable fashion, and also a means of facilitating much needed socialization and peer interaction throughout their lives.

Teaching Table Games

In the past most children learned table games at home, but several factors have changed this picture in general, and altered it further for an individual with a disability. Adults in single parent families have less leisure time available to sit down and play games with their children, because more time must be spent on maintaining the home. If a child has a disability, more work is added and even less leisure time is available. Low income families, frequently those

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with single parents, have less money to spend on leisure activities including table games. Television is a more expedient way of occupying leisure time.

Even if a family does play table games, learning enough to join the activity is not always easy for children with disabilities. Some children need modifications in teaching techniques to fit their own personal learning styles or modifications in the game itself or in how it is played. Parents and siblings may not have expertise or be willing to interrupt flow of an enjoyable activity to teach it to a child with a disability. Inclusion for this child may be passive (observer) rather than active (independent player).

Educators and recreation specialists are often needed to facilitate the teaching-learning process. Once a child or adult with a disability has learned a table game (and any necessary modifications have been devised), transition to participation with family and peers is fairly easy to accomplish. But, how does one go about teaching a table game?

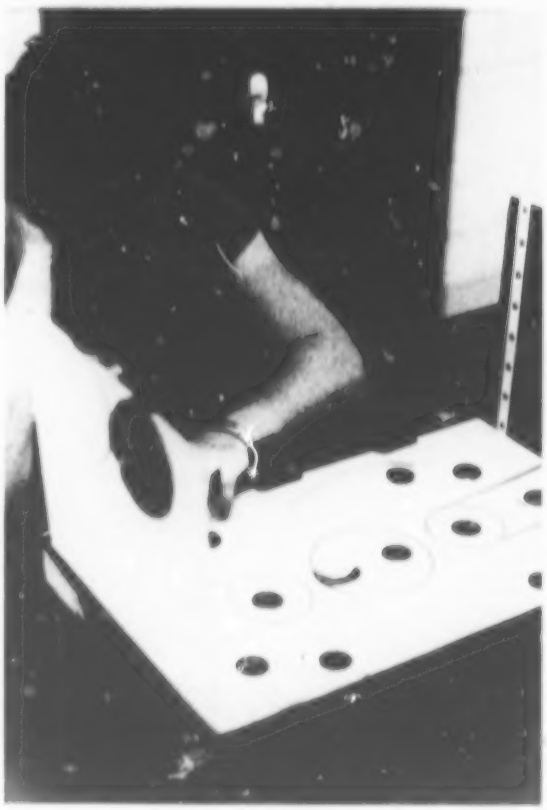
Selection of appropriate games is critical. Appropriateness applies to a variety of factors:

- *Age of game players.* Selecting a game because older family members like it, or to humor a younger child, might be all right for a one-time game session, but when teaching a new game select one appropriate to the age of the participant.
- *Interests of game players.* Most games have concepts behind them. Matching those concepts to interests of players makes learning more fun, particularly when learning becomes difficult.
- *Physical capabilities of game players.* Some games have parts to manipulate. Be sure players have physical capabilities necessary to perform those tasks. An alternative is to modify the object or the task to be performed.
- *Cognitive capabilities of game players.* Most commercial games have recommended ages for participants. That age is tied to cognitive abilities someone that age should possess. Asking someone who cannot count to play a game requiring multiplication and division, for example, results in a frustrating, unenjoyable experience.
- *Time available.* A game taking two hours to finish isn't a good game to start when only 15 minutes are available.
- *Space available.* A game spreading out over an entire cafeteria table shouldn't be tried on a single student desk.
- *Games available.* While learning new games, be sure the deck of cards is complete, clues are all there, score card is available, and a copy of rules is handy for reference.

To be selected a game should "fit the players" in ALL categories.

Teaching a game takes time. It can't be rushed. Steps in the instructional process might include:

- Introduce the game by showing its parts and telling the object of the game.
- Practice physical tasks involved in participation — moving tokens, handling cards, placing pieces.
- Discuss mental tasks — e.g., review numbers on dice, count, match, add, subtract, name colors, review the story.
- Play a demonstration game — have people who already know the game play a short game, explaining what they do and how they do it.
- Play a practice game — a game with no winners, a game that can be stopped at any time when all players understand what to do.
- Play an open game — a game with card hands, for example, played open on the table. New players can receive help and everyone can explain what is being done.



- Have one person "coach" the person learning the game. When that person's turn comes, ask questions to cue the decision making needed to play. "Which is your highest card?" "Can you find a card that looks just like the one on the table?"
- Play without keeping score. No one has to worry about additional arithmetic. All can concentrate on tasks of the game.
- Play with only a few people, even if the game calls for more. Gradually add people as tasks and concepts are understood.
- Emphasize playing and having fun. Who wins is not always particularly important. Not worrying about a winner removes stress and self-consciousness.

Sometimes making an adaptation in a game or using an adapted device can enhance participation for an individual with a disability. If, in teaching a game, a task or concept seems particularly difficult, here are some helpful possibilities:

- Add arrows or other lines to a board game to show direction of travel.
- Diagram the board on a separate piece of paper and draw possible moves and consequences.
- Use flat board with a narrow slit cut into the board at an angle as a card holder for someone who has difficulty holding a full hand of cards; commercial card holders are also available.
- Use cup or plastic glass to shake dice for someone who has difficulty grasping and releasing small objects.
- Obtain oversize cards and large print versions of games for individuals with vision disability.
- Laminate cards and/or paper game pieces for individuals who have difficulty with grasp and release or for individuals who have difficulty keeping hands dry and clean.
- Many games come in magnetic board variations (usually for use outside or on boats). These are particularly nice for an individual who has problems with fine motor control. They are less disrupted by accidental bumps and jars.
- Mechanical devices are available to perform the task of shuffling cards.
- Many popular games have computer versions. While computer games are not included here, using a computer version of a well-known game keeps the concept the same, but completely changes physical tasks necessary for play. With many computer adaptations available for individuals with disabilities, computer use opens a whole new way for enjoying popular games.

Games Index

Following is a general index to common table games. It does not include every game ever made, but does contain a representation of those games recently and currently available commercially. Most games have been in use long enough that they can be found in second hand or thrift shops and rummage sales. Do not overlook recycled games for a source of game pieces. Extra pieces are often needed to try modifications and replace worn out or lost items.

Selection for the index has been limited to nonelectronic table games. Card games have only been included where the game is packaged and marketed as a separate game. Card games played with a regular deck of cards are not generally included. Bookshelf games and play/party adult games are not included.

Index information entries include:

- *Title.* Games are listed alphabetically by title. Game variations are included under the listing of the basic, introductory level game.

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- *Publisher/Manufacturer.* A master list of commercial game companies (with address) is presented on this page. Questions on rules and queries regarding obtaining lost pieces and printed instructions can be directed to the manufacturer.
- *Age.* This notation cites the chronological age recommended by the game publisher. The determination is usually based on skills involved, as well as age-appropriateness of content and presentation. Be sure skills and concepts, as well as presentation, are appropriate to participants.
- *Type.* Three categories are considered. B means it is a board game; C is a card game; O means something besides a board or card game. An * indicates participants, even at the age appropriate level, may find this game complicated to learn.
- *Players.* Number of players recommended by the publisher is cited. A + sign represents or more, thus an entry reading 2+ means 2 or more players. Use this information to determine if there are enough players to play a particular game effectively, as well as to determine if enough sets of the game are available if a tournament is planned.
- *Time.* Approximately how long the game takes to play after it has been taught and when played by the recommended number of players is indicated. S means short, a half hour or less; M means medium, a half hour to an hour; L means long, a game lasting several hours. It isn't much fun to have to stop a game in the middle; therefore use this column to help select games suitable for time available.
- *Space.* How much space is needed to play the game? S means small space, such as a school desk top; M means medium space, such as a card table; L means a large table is necessary.
- *Variations.* A few games with alternate forms are noted.
- *Physical Tasks.* This entry notes physical tasks performed by players. In some cases a helper can assist individuals with limited hand use. In other situations mechanical aids can facilitate participation. Identify skills needing pregame teaching/practice; arrange for modification of tasks and for assistive devices before presenting a game for actual play, as necessary.
- *Cognitive Tasks.* Cognitive skills and/or concepts used in play are described. Use this column to select games appropriate to functional levels of players or to identify games used to reinforce particular academic tasks or areas.

Not listed is score keeping. It is not always necessary to score and determine a winner. Playing for fun should be encouraged.

The Games Index begins on the next page.

Commercial Game Suppliers

Ralph Anspach
P.O. Box 2427
San Rafael, CA 94902

Cadaco
310 W. Polk Street
Chicago, IL 60607

Colorforms
Norwood, NJ 07648

Fyanes Corporation
Chicago, IL

Gabriel Industries
Hagerstown, MD 21740
Elmwood Park, NJ 07407

John N. Hansen
2861 LaCresta Avenue
Anaheim, CA 92806

IDEAL
Newark, NJ 07105

International Games
P.O. Box 596
Joliet, IL 60424

Invicta
200 5th Avenue
New York, NY

Kenner Products
Cincinnati, OH 45202

Lakeside Industries
4400 W. 78
Minneapolis, MN 55434

E.S. Lowe
200 Fifth Ave.
New York, NY 10010

MPH
P.O. Box 1496
South Bend, IN 46624

Parker Brothers
Box 900
Salem, MA

Pressman
200 5th Avenue
New York, NY 10010

Selchow & Richter
New York, NY

Shaper
9901 S. Shore Drive
Minneapolis, MN 55441

TSR Hobbies Inc.
P.O. Box 756
Lake Geneva, WI 53147

3 M Company
St. Paul, MN 55101

Tony Corporation
901 E. 233 Street
Carson, CA 90745

Whitman
Western Publishing
Racine, WI 53404

GAMES INDEX

Title *Publisher*	*Age*	*Type*	*Players*	*Time*	*Space*	*Physical Tasks*	*Cognitive Tasks*
Aggravation[1] Lakeside	5-A	O	2-6	M	M	Handle marbles	Count, spatial orientation
Alien Kenner	7+	B	2-4	M	M	Handle dice, move token	Read
All the King's Men Parker	8-A	B	2	M	M	Move small figure	Count, capture, directionality
Allowance Game Milton Bradley	6-10	B	2-4	S	M	Handle dice, move token, handle money	Count, read, add, subtract, allowance concept
Alphabet Soup Milton Bradley	4-8	B	2+	S	S	Spin spinner, place small card	Match letters
Annie Parker	5-10	B	2+	S	M	Handle dice, place token and chip	Count, read
Antimonopoly Anspach	8-A	B*	2-6	L	M	Handle money, move token	Read, money, count, buy and sell
Avanté Fyanes	8-A	B*	2	M	S	Handle checkers and cards	Count, add, spatial orientation
Backgammon	10-A	B	2	S	S	Handle checkers and dice	Count, add
Barbie Game Whitman	5-9	B	2-4	S	M	Spin spinner, move token	Count to 4, celebrity concept
Bargain Hunter Milton Bradley	9-A	B*	2-4	M	M	Handle cards and money, move token, pull lever	Buy and sell, finance, money
Barrel of Monkeys Lakeside	3+	O	2+	S	S	Lift small monkey figure	Count, spatial orientation
Bas-Ket Cadaco	6-A	O	2	S	S	Move single finger lever, place ping pong ball	Count, basketball scoring
Battleship Milton Bradley	8-A	O	2	S	S	Place pegs	Spatial orientation, letter & letter recognition, object permanence
Bent Outta Shape Gabriel	6+	B	2-4	S	M	Spin spinner, handle chip, move body parts	Body parts recognition

1. Variations include Deluxe/Split Level

Title *Publisher*	*Age*	*Type*	*Players*	*Time*	*Space*	*Physical Tasks*	*Cognitive Tasks*
Bingo	6-A	O	2+	S	S	Place chip	Number & letter recognition
Blockhead Parker	4-A	O	1+	S	S	Pick up and place block	Hand-eye coordination, balance
Boggle[1] Parker	8-A	O	2-6	S	M	Write	Spell
Bonkers Parker	8-A	B*	2-4	M	M	Handle cards, dice	Count, read
Booby Trap Lakeside	5+	O	2+	S	S	Lift small piece	Count; green, red, blue color recognition
Can't Stop Parker	10-A	O	2-4	S	M	Place small piece, roll dice	Hand/eye coordination, color, spatial orientation, numbers
Candyland[2] Milton Bradley	4-8	B	2-4	S	M	Draw cards, handle token	Match colors
Careers Parker	8-A	B*	2-6	M	M	Move token, handle dice, write	Count, add, read, money
Chaos Lakeside	7+	B	2-4	S	M	Move checker	Memory, spatial orientation, object permanence
Checkers	6-A	B	2	S	S	Place checkers	Spatial orientation, forward and backward, capture
Cherry-O Whitman	4-8	O	2-4	S	M	Spin spinner, place small cherry piece	Count to 4
Chinese Checkers	6-A	O	2-6	S	S	Handle marble	Spatial orientation, color recognition
Chinese Chess Gabriel	8+	O	2	S	S	Place checker	Color recognition, spatial orientation, capture
Chutes and Ladders Milton Bradley	4-8	B	2-4	S	M	Spin spinner, move token	Number and figure recognition, spatial orientation
Cinderella	4-10	B	2-4	S	M	Spin spinner, move token	Count to 4

1. Variation: Big Boggle

2. Variation: Candyland Bingo

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Title *Publisher*	*Age*	*Type*	*Players*	*Time*	*Space*	*Physical Tasks*	*Cognitive Tasks*
Close Encounters of a Third Kind	8-A	B	2-4	M	M	Handle dice, move token, place chip, mark with crayon	Number recognition, count, add, number match
Clue[1] Parker	8-A	B*	2+	M	M	Make pencil check, move token, handle cards	Count, situation relevance, reasoning, deduction
Concentration Milton Bradley	10-A	O	2-5	M	M	Handle cards	Matching, puzzle completion, memory
Connect 4 Milton Bradley	7-A	O	2	S	S	Place checker	Spatial orientation
Conspiracy Milton Bradley	10-A	B*	3-4	L	M	Move playing piece, write	Reading, math, international intrigue
Contraption Lakeside	5+	O*	2	S	S	Move level, place marble	Figure ground differentiation, gear workings
Cootie Schaper	All	O	2+	M	M	Put together pieces	Object completion, count
Cribbage	10-A	O	2	S	S	Handle cards, handle pegs	Count, make sets, add
Deduction Ideal	8-A	O	2	S	S	Place peg	Number & letter recognition, spatial orientation, object permanence
Domination Milton Bradley	1-A	O	2-4	M	S	Move piece	Count, color recognition, capture
Dominoes	6-A	O	2	S	M	Place tiles	Count, match, add
Don't Break the Ice Schaper	5+	O	2	S	S	Hit with small mallet	Hand-eye coordination, spatial orientation
Don't Miss the Boat Schaper	5+	O	2-4	S	M	Place marble, set up game	Count, time, space & speed concepts, spatial orientation
Don't Tip the Water Colorframes	4+	O	4-8	S	M	Set up game, place small plate	Balance concept
Double Play Baseball Lakeside	8-A	O	2	M	S	Handle dice, tip cup	Number recognition, add, symbol recognition, baseball concepts

1. Variation: VHS video version

Title *Publisher*	*Age*	*Type*	*Players*	*Time*	*Space*	*Physical Tasks*	*Cognitive Tasks*
Down the Tubes Whitman	8-A	O	2-6	S	S	Handle pegs, assemble tray	Count
Dragonmaster Lowe	12-A	C	3-4	M	m	Handle dice, handle money, cards	Fantasy dragon era, money, mystical environment
Dungeons and Dragons[1] TSR	10+	B*	3+	L	M	Handle cards, move token, handle dice	Count, add, fantasy, accult, role playing
Espionage MPH	10-A	B*	2-4	L	M	Handle dice, move token, handle cards	Count, espionage, strategy
Even Elephants Forget Milton Bradley	6-10	B	2-4	M	M	Handle dice, move token, handle money, place card	Count, number & animal recognition, memory
Family Feud Milton Bradley	10-A	B	2+	S	M	Handle cards	Knowledge questions
Fantasy Forest TSR	5+	B	2-4	S	M	Handle cards, move token	Count, match
Foil 3M	A	C*	2-6	S	M	Handle cards	Read, count
Funny Football Tony	5+	O	2	S	S	Twist a wind-up figure	Count, add, football concept
Game of the States Milton Bradley	7-14	B	2-4	M	M	Spin spinner, handle small piece, money	Distances, travel, states of the U.S., money
Go to the Head of the Class Milton Bradley	8-A	B	2-8	M	M	Move token, handle cards	Read, general information knowledge
Goldilocks & Three Bears Cadaco	3-8	B	2-4	S	M	Spin spinner, move token	Matching pictures
Goof Around Golf Tony	5+	O	2-4	S	S	Twist a wind-up figure	Count, add, golf concept

1. Variations include different series of story situations.

Title *Publisher*	*Age*	*Type*	*Players*	*Time*	*Space*	*Physical Tasks*	*Cognitive Tasks*
Half Time Football Lakeside	8-A	O*	2	M	S	Roll dice	Add, football concept
Hollywood Squares Milton Bradley	6-A	O	3+	M	S	Handle cards	Read, tic tac toe concept
Homerun Homer Tony	5+	O	2	S	S	Twist a wind-up figure	Count, add, baseball concept
Husker Du Lakeside	5+	O	2+	S	S	Handle small chip	Match pictures, location memory
Inner Circle Milton Bradley	8-A	O	2-4	M	S	Move token, lift board	Count, number recognition
Inventors Parker	9-A	B*	3-4	L	M	Move token, handle cards, handle money	Count, money, read, buy & sell, inventions
Isolation Lakeside	8-A	O	2	S	S	Handle token, depress small plate with finger	Spatial orientation
Ker Plunk Ideal	6+	O	2-4	S	S	Set up game, pull small stick	Count, spatial orientation
Klondike MPH	10-A	B*	2-4	L	M	Move token, handle dice, handle money, handle cards	Count, read, money, buy & sell
Life Milton Bradley	9-A	B*	2-8	L	M	Turn dial, handle dice, handle cards, handle money	Count, add, subtract, activities of daily living, money
Mad Magazine Game Parker	8-A	B	2-4	M	M	Handle dice, place token, handle cards	Count, read, handle money
Master Mind Invicta	8-A	O	2	S	S	Place peg	Spatial orientation, object permanence, memory
Mille Bornes Parker	8-A	C*	2+	S	M	Handle cards	Count, add, automobile driving
Monopoly Parker	8-A	B*	2-8	L	M	Move token, handle dice, handle money and cards	Count, money, buy and sell real estate

Title *Publisher*	*Age*	*Type*	*Players*	*Time*	*Space*	*Physical Tasks*	*Cognitive Tasks*
Mother Goose Cadaco	3-8	B	2-4	S	M	Spin spinner, move token	Match colors, match pictures
0'No 99 International Games	7-A	C	2-8	S	S	Handle cards	Count, add, subtract
Othello Gabriel	8-A	O	2	M	S	Place chip	Spatial orientation
Pac Man[1] Milton Bradley	7-14	B	2-4	S	M	Move token, handle marble	Count, capture
Parcheesi Selchow & Righter	8-A	B	2-4	S	M	Handle dice, move token	Count, chase
Password Milton Bradley	10-A	O*	3-4	M	M	Hold single card	Read, word association
Pay Day Parker	8-A	B*	2-4	M	M	Move token, write, handle money	Number recognition, money, read, employment concept
Perfection Lakeside	6+	O	2+	S	S	Place small shape, set timer, turn knob	Match shape
Picture Tri-Ominoes Pressman	4-8	O	1-4	S	M	Place pieces	Match pictures
Pit Parker	8-A	O	2-4	M	S	Handle cards, hit bell	Read, trading
Probe Parker	8-A	O	2-4	M	S	Handle cards	Letter recognition, spelling
Raggedy Ann & Andy Milton Bradley	4-9	B	2-4	S	M	Spin spinner, handle cards	Complete puzzle, match pictures
Razzle Parker	8-A	O	2	S	S	Move marker	Letter recognition, spelling
Risk Parker	10-A	B*	2-6	L	M	Handle cards, handle dice, handle small object	Count, add, world conquest

1. Variations include Pac Man card game

Title *Publisher*	*Age*	*Type*	*Players*	*Time*	*Space*	*Physical Tasks*	*Cognitive Tasks*
Rubik's Game Ideal	7-A	O	2-6	L	S	Place peg, twist Rubik Cubes	Color match
Rubik's Race Ideal	7-A	O	2	M	S	Slide tile	Color recognition, match color pattern
Ruff House Parker	8-A	B*	2-4	M	M	Move token, handle dice	Count, add, subtract, read
Rummikub Pressman	4-8	B	2-4	S	S	Place tile	Rummy card game, matching, making sets, colors
Rummy Royal Whitman	7-A	C	2-8	S	M	Handle cards, handle chips	Count, card recognition, group cards, bet
"Scene" Games[1] Hansen	9-A	B*	2-6	L	M	Move token, handle cards, money	Count, read, money, buy & sell
Scrabble Game[2] Selchow & Richter	8-A	B	2-4	M	M	Place small tile	Spell, add
Sesame Street Light and Dark Milton Bradley	4-7	O	2	S	S	Hold and point pencil	Letter recognition, object recognition, matching
Shake Bingo Schaper	8-A	O	2	S	M	Place token, roll dice	Number recognition, spatial orientation
Skip-Bo International Games	7-A	C	2-6	S	M	Handle cards	Number and color matching
Skunk Schaper	All	O	2+	S	M	Roll dice	Number recognition, add, skunk animal
Smurf Game Milton Bradley	6-10	B	2-4	S	M	Handle dice, move token, handle cards & tiles, set up 3-D	Number recognition, count
Snoopy Come Home Milton Bradley	7-12	B	2-4	S	M	Move token, spin spinner	Count

1. Variations include a variety of city locations 2. Variation: Scrabble Alphabet

Title *Publisher*	*Age*	*Type*	*Players*	*Time*	*Space*	*Physical Tasks*	*Cognitive Tasks*
Snow White Cadaco	3-8	B	2-4	S	M	Spin spinner, move token	Numbers to 5, count to 5
Sorry Parker	6-A	B	2-4	M	M	Handle cards, move token	Count, directionality
Spare-Time Bowling Lakeside	8-A	O	2	M	S	Handle dice	Add, score bowling
Spill & Spell Parker	6-A	O	2+	S	S	Handle dice	Count, add, spell
Stay Alive Milton Bradley	8-A	O	2-4	S	S	Place marble, push/pull lever	Object permanence, physical support
Steps & Chutes Ideal	4+	O	2-4	S	S	Place marble	Count to 6
Stratego Milton Bradley	10-A	B	2	M	S	Move token	Count, capture, spatial orientation
Strawberry Shortcake Parker	4-8	B	2-4	S	M	Spin spinner, move checker	Color matching
Strollin Bowlin Tony	5+	O	2-4	S	S	Twist a wind-up figure	Count, add, bowling concept
Superfiction Lakeside	8+	O	2+	M	M	Move switch, turn dial, place small piece	Match shapes, complete puzzle
Sure Shot Hockey Ideal	5+	O	2	S	M	Turn knob, use both hands at same time	Count, hand-eye coordination, ice hockey concept
Tic Tac Toe Pressman	6-A	O	2	S	S	Place plastic X and O	Spatial orientation

Title *Publisher*	*Age*	*Type*	*Players*	*Time*	*Space*	*Physical Tasks*	*Cognitive Tasks*
Tiddly Winks Pressman	6-A	O	4	S	M	Pop plastic disk with another	Hand-eye coordination
Trap Door Milton Bradley	6-12	O	2-4	S	S	Place marble, handle game disk shape	Object permanence
Tri-Ominoes[1] Pressman	8-A	O	2-8	M	M	Place small piece	Count, add, match numbers
Tripoley Cadaco	8+	O	2+	S	M	Handle cards, handle dice, handle chips	Gamble
Trouble Gabriel	6+	O	2-4	S	S	Press with finger, move token	Number recognition, count
Trust Me Parker	8-A	B*	2-4	M	M	Handle dice, handle cards, handle money	Add, subtract, multiply, stock broker tasks
TTT-10 S & R Games	6-A	B	2	S	S	Handle cards	Spatial orientation
221-B Baker Street[2] Hansen	A	B*	2+	L	M	Move token, handle dice	Murder mystery concept
Uno[3] International Games	7-A	C	2-190	C	M	Handle cards	Numbers & words, counting, spatial orientation
Venture 3M	A	C*	2-6	S	M	Handle cards	
Waterworks Parker	8-A	C	2-5	S	L	Handle cards	Matching shapes, spatial orientation, plumbing concept
Wizard of Oz Cadaco	4-10	B	2-4	S	M	Spin spinner, move token, handle cards	Count, read

1. Variations: Quad-Ominoes, Stack Ominoes 2. Variations include series of crime situations 3. Variation: Unto Wild Tiles

Title *Publisher*	*Age*	*Type*	*Players*	*Time*	*Space*	*Physical Tasks*	*Cognitive Tasks*
Yahtzee[1] E.S. Lowe	8-A	O	2+	M	S	Handle dice, write	Count, add, form sets, read, spell
Zone X Invicta	10-A	O*	2	S	S	Write, place pegs	Spatial orientation, memory, color

1. Variations: Triple Yahtzee, Word Yahtzee

Section Three

FITNESS AND LEISURE

Aerobic Dance

Susan J. Grosse

Each week thousands of people don brightly colored exercise clothes and head for the nearest athletic club, spa, fitness center, or gym to participate in one of the fastest growing pastimes in America. Aerobic dance is not only a chance to get a good aerobic work out in a pleasurable rhythmic way, but also a chance to socialize, make new friends, and get a break from daily routines. Part fun, part fitness, part fad, aerobic dance has become part of our culture.

As with other popular activities, interest in participation is also increasing among individuals with disabilities. As individuals with disabilities enter community programs in sport and recreation, they are also entering fitness programs. The same factors that make aerobic dance attractive to the general population make it equally attractive to many individuals with differences in sensory functions, cognitive abilities, motor activities, and socio-emotional functions.

But while aerobic dance becomes more popular, classes and work-out sessions are not necessarily becoming more accessible to individuals with disabilities. Barriers, seen and unseen, still exist. This article is designed to provide information on program implementation to make aerobic dance accessible and available to anyone who wishes to participate. Information on selecting specific exercises and dance steps is not included. Readers should refer to abundantly available text material on those topics (Coe, 1992; Minton, 1986; Sorensen, 1979; Wilmoth, 1986).

Aerobic Dance for Everyone

Speaking to individuals with disabilities, fitness guru Richard Simmons stated:

> "You may think that exercise classes and 'building a body beautiful' are for 'other people.' Well, my friend, you're wrong. You need exercise and proper nutrition a thousand times more than those body beautiful types. You need it for survival. Because your body has special stresses, those biological systems that are functioning must be better and stronger. Just plain 'normal' isn't good enough." (1986, p. 1)

Individuals with disabilities haveadditional stress, physical as well as mental. Pushing a wheelchair up hill or holding heavy doors open while wheeling through takes energy. Concentrating on verbal conversation in the midst of a busy restaurant takes energy. Walking at a steady pace behind a guide dog requires fitness. Constantly struggling to unscramble letters and words that are forever upside down and/or backwards takes stamina. Coping with barriers—any barriers—burns energy. An individual with a disability needs to be physically fit.

Strength, flexibility, endurance, cardiovascular function, and appropriate body composition are prerequisites for every healthy human body. It is only the degree each is developed that differs from person to

person. According to Winnick and Short (1985, p. 45) individuals with disabilities "have muscles which need to be strengthened, a cardiovascular system which should operate at optimal efficiency, and a body which can respond to the many demands involved in sport activities." More importantly, they continued, "methods of developing physical fitness in individuals with impairments are the same as those used with nonimpaired individuals." Aerobic dance is one of these methods.

Developed in the 1970s by Jacki Sorensen, aerobic dance is a physical fitness program offering complete and effective conditioning. It can tone and strengthen all body muscle groups. It conditions heart, lungs, and blood vessels by demanding this internal, life-supporting system be strengthened through healthy use! Of most importance, this fitness program is fun and challenging. It is a combination of dancing for the fun of it, and dancing for more energy every day (Sorensen, 1975b, p. 2). Continuous exercise set to music and combined with dance steps provides the general format. Upbeat, lively, challenging, and fun! As those who have tried it have found out, anyone can participate in and enjoy aerobic dance.

The Aerobic Dance Experience

For individuals with disabilities, participation in aerobic dance provides several unique opportunities to:

- develop aerobic capacity through participating in continuous activity;
- improve motor patterns through developing rhythmic movement;
- increase range of motion through use of all major muscle groups;
- improve endurance by gradual lengthening of participation time;
- improve strength through including hand implements and/or free weights during appropriate dance activities;
- increase socialization through participating in enjoyable group activity;
- increase community adaptation through participating in community-based aerobic dance sessions; and
- increase constructive use of leisure through participating in an activity that can be done at home using video format.

What makes aerobic dance so special? What makes aerobic dance such a unique fitness activity?

Aerobic dance is continuous. Starting with warm-up, into main workout routines, right through cool-down, participants keep moving. There are no starts and stops. Between routines individuals are encouraged to keep some part of their bodies moving—walking, swinging arms, moving feet in place, doing something to maintain heart rate at the activity level.

Aerobic dance has several levels of intensity. Participants wishing high levels of intensity run, perform explosive movements with high power, take swings to full range of motion and lifts to highest point possible. Participants wishing medium levels of intensity jog, perform explosive movements with slight power, take swings to half range of motion, lifts to moderate levels. Participants wishing low levels of intensity walk, perform explosive movements softly with little power, take swings easily and gently, and maintain lifts at low levels. There is an intensity level for everyone from the fit to the frail. Participants are advised to seek medical advice concerning levels of intensity and select those which meet their personal fitness needs. Target heart rate or perceived exertion methods can be used for monitoring intensity.

Target heart rate can be determined on an individual basis. The individual's age is subtracted from 220 and the resulting number multiplied by 0.65 to 0.85. To be cardiovascularily effective, exercise exertion should be at the target heart rate for a minimum of 20 minutes, performed 3 to 5 times per week (Reynolds, 1992).

According to Reynolds, however, target heart rate method does not work for all persons. Many individuals with coordination problems, or with sensory loss, may have difficulty finding and feeling their pulse to monitor their heart rate. Because of interruptions in the sympathetic nervous system response, persons with complete spinal cord transection above the fourth thoracic vertebra may be unable to achieve a heart rate above 100-110 beats per minute, making the target heart rate formula dangerous, if not impossible to follow. In these situations, intensity monitoring can follow the Relative Perceived Exertion Scale. Participants place a numeric value on how hard they feel they are working. Zero indicates no

exertion; 5 indicates perception of heavy (strong) exertion; 10 indicates very, very heavy (maximum) exertion. This method may also be useful when working with individuals with cognitive disability who may have difficulty counting their pulse.

Using either target heart rate or perceived exertion allows each individual to get maximum benefits from an aerobic dance workout. It is common to view a group of individuals performing the same aerobic dance routine, but with vastly differing levels of intensity.

Aerobic dance is rhythmic. Rhythmic patterns enhance movement. A beat or count cues action. Repeated patterns make routines easier to learn. Upbeat music stimulates energy and involvement. Melodic lines paired with exercises enhance performance. Mood and motion become one—that is the fun of aerobic dance.

Aerobic dance is a community activity. Accessibility is a problem many individuals with disabilities face when selecting a fitness activity. Where to go to participate, which groups to join, and how to participate on one's own are just a few challenges.

Aerobic dance is available to almost everyone in some form or another. Possibilities include:

- *Community classes.* Schools and recreation departments offer aerobic dance as part of their regular programs. Section 504 of the Rehabilitation Act and the Americans with Disabilities Act have ensured that school facilities be accessible to individuals with disabilities.
- *Private clubs.* Community based private exercise clubs often structure sizable portions of their program to include aerobic dance classes and workout sessions.
- *Television.* Public service, as well as network television, include exercise programs. As aerobic dance gained popularity so did aerobic dance television programming. Participants in their own homes can participate along with dance leaders on television. Programs often have three different people performing the same routines to facilitate participation at any intensity level.
- *Video.* Aerobic dance to hits of the '50s, '60s, '70s or '80s. Work out right along with Jane Fonda. Give your exercise a jazz beat. Join other individuals in wheelchairs as Richard Simmons leads. Video selections increase almost daily. Catalog ordering—from commercial outlet or local museum video loan—means never having to leave home to aerobic dance. Just clear a space, put on the video, and workout. Don't forget home-made videos. Instructors wanting to use the video format with routines of their own choreography need only video themselves or their classes.

No other aerobic activity offers this multitude of participation opportunities. Anyone wanting to try aerobic dance, can. No prior dance experience is necessary. Each aerobic dance session has a leader. Emphasis is on participation, not expertise. Individuals are encouraged to relax and do routines with their own special styles and within their individual limits of coordination, reaction time, flexibility, and endurance. Skill will develop naturally and individually by doing the dances, not by practicing parts of them. Dance is only a vehicle for fun and fitness (Sorensen, 1978a, 4).

Program Organization to Facilitate Participation by All

Types of program organization are as varied as the music to which participants work out. Setting, peer group, format, formation, music, routines, and teaching techniques all affect success of participants. What facilitates participation by individuals with disabilities?

Setting

Aerobic dance is done just about everywhere, from the fancy health club mirrored studio to the family living room. Anywhere will do. But some settings do more to facilitate participation of individuals with disabilities than others.

- Individuals using mobility aids benefit from a workout space with plenty of space to move around. Wheelchairs, walkers, and crutches take additional space.
- A padded surface is nice for body work on the floor. However, carpet or other padding makes mobility more difficult for someone using a wheelchair.
- A spring floor or hardwood floor is softer to land on than tile. Individuals with joint impairments appreciate a gentle impact floor.
- A room well lit but free from glare facilitates participation for individuals with visual impairments.
- A room with good acoustics makes it easier for individuals with sensory impairments to hear directions.

- Buildings and locker rooms should be physically accessible to all participants.
- Tape markings on floor facilitate place and space of participants.

Peer Group

It is possible to exercise alone, but togetherness is certainly more fun. Grouping people by common interests usually gets best results. When programming for aerobic dance it is neither necessary, nor appropriate, to group individuals according to disabilities. Because each person can work at his/her own level of intensity and in his/her own space, integration of individuals with disabilities with nondisabled is most appropriate. Just an interest in aerobic dance is enough to generate a group. However, other ideas include:

- *Same age range.* Seniors and/or teens are two specific groups that enjoy and benefit from participating with others in the same age range. Tastes in music seem to follow age trends.
- *Same sex.* All-women groups are common, mostly because less men participate in aerobic dance.
- *Same category of lifestyle.* Singles, employees at the same firm, mothers/daughters, and participants in some other agency program such as a swim group are typical arrangements. Lifestyle groupings sometimes facilitate scheduling as individuals are often available at similar times of day.
- *Type of aerobic dance routines preferred.* Many individuals prefer a workout with lots of moving across the floor. Others prefer a workout remaining in one place. Some prefer a short workout, some longer. Some individuals are more advanced in their routines than others. As individuals continue in aerobic dance programs it will be helpful to provide different types of aerobic sessions.

Format

Three formats are available—video leader, audio leader, and live leader.

Video leader. With a video leader, participants watch a television screen placed in front of the group. The program on the screen may be a video tape or a program being broadcast from a television station. In a residential setting it could be a video broadcast on closed circuit television within the residence. Whatever the case, participants follow the workout on the screen.

Advantages to this format include:

- Routines are established and music provided. Participants don't need to find a leader, just a program.
- With a video tape, participants can start and stop as they wish, repeating some segments, fast forwarding to skip others.
- No minimum number of people is needed. Home exercise groups often consist of just a few friends. Impetus to start might come from:
  - suggestion made by recreation leader or thera pist.
  - promotion of a local television program.
  - magazine, newsletter, newspaper article promoting home aerobic exercise.
- A knowledgeable leader is not needed. Even experienced teachers use video instruction for new activities. Just follow the leader on the screen. This is extremely useful for teachers who are not particularly comfortable initially leading a dance activity. It is also useful in situations where the leader wishes to spend time assisting individual participants as routines are performed. The television continues to lead as the teacher moves through the group.
- This format is also useful for individuals or small groups of participants to work-out at home between more formal sessions at a spa or gym.

Disadvantages to video use include:

- A television screen is difficult to see if the group is large. It is also difficult to follow for individuals with sensory impairments.
- Participants cannot ask questions. Potential for interactions is greatly decreased. Individuals with cognitive disabilities, for example, may benefit from having a live leader available to answer questions and correct possible performance errors.
- Variety in routines is limited. Participants have to do what is on the video and that never changes. Nor can a routine be modified for specific group needs.
- In some cases, there is no one to monitor participation. This is a particular draw-back if an individual with a disability—a heart condition for example—needs monitoring for overexertion. An individual with a disability that could be affected by or during exercise should be advised to participate with a live format leader.

Audio leader. Using an audio leader means there may or may not be a person performing the routine as an example. Verbal directions are included on a music record or tape. As the music plays, so does verbal information. A leader may still be in front of the group giving additional cues, but the main information comes in prerecorded audio format. Advantages

of use are similar to those for a video leader. An additional disadvantage is absence of a visual role model. This format would not be useful for individuals with auditory impairments since audition is the only means of information input.

Live leader. Using a live leader means a person is at the front of the group doing the movement workout and giving verbal directions at the same time. Music accompanies the live demonstration and verbal information.

Advantages to a live leader include:

- Someone is present to individualize and personalize the workout.
- Someone is present to monitor exertion and performance. Having a leader to give performance feedback assists individuals having difficulty learning routines.
- Someone is present to assist in modifying specific exercises if and when necessary. Often individuals with disabilities can make their own modifications of exercises, but suggestions from a leader may be needed to initiate this process. Sometimes, particularly if specific muscle use is desired or position needed, assistance of a leader is necessary.
- A live leader can pace routines to fit needs of the group. Exercises can be repeated, tempo slowed down or speeded up, formation changed, and, most importantly, encouragement given as necessary.
- A live leader is a built-in cheerleader for aerobic dance. Enthusiasm is contagious. Smiles and encouragement from a live leader help every participant make the most of the aerobic dance session.

The only disadvantage of a live leader is having to find one! The easiest solution is for the person wanting a leader to become one. Yes, training is necessary, but using a video is a place to start. Becoming familiar with basic exercises is a place to start. Sequencing these exercises together to the beat of familiar music is the next step. While knowledge of the muscular system is important, it too can be acquired with study. College and university departments of physical education, kinesiology, exercise science, or human performance, the YMCA, and national spa and fitness organizations all offer training. Dance choreography can be learned and improved with experience. Start by working out to existing, prerecorded routines and gradually branch out designing routines to favorite music. (Later in this article there is information on putting together an aerobic dance workout.)

Formation

Class organization facilitates participation. Participants need enough space to move all joints through full ranges of motion without hitting anyone else. Space so crowded that individuals have to restrict movements or collide is not appropriate for aerobic dance. Limit the number of participants to fit into the space available.

Beginners need more space than participants experienced in aerobic dance. Beginners tend to make more directional errors, moving right instead of left, for example. Beginners also tend to lose their places in routines, getting a few beats or movements behind the group. Close spacing only works when everyone can be depended upon to do the same thing at the same time. Otherwise, collisions occur when errors are made.

Routines where participants remain in one place require less space than those where individuals move from place to place or across the floor. When some participants move and others remain stationary, even more space is needed.

Some types of disabilities may dictate need for additional space. Crutches, walkers, and wheelchairs take up more space than just the human body. An individual with sensory or perceptual disability may need additional space so as not to feel threatened by adjacent movement. Lack of depth perception can cause insecurity when many people are moving at the same time.

Everyone in the group needs to feel safe and comfortable. That means having enough space at all times to move without hitting anyone else or having anyone hit or collide with individuals. Appropriate spacing, planned ahead of time, can create a positive performance environment for all participants.

Typical patterns of organization include:

- *Circle.* A single circle or circles within a circle both work. Advantages include participants being able to see each other, as well as the leader. Movement across space is accomplished by everyone in the circle moving in the same direction. If a double circle is used, one circle can remain stationary and the other move. With a double circle, the inner circle can be made of participants working at a lower level of intensity (shorter distance to move). Different circles can move at different speeds.

  A circle, however, makes it difficult for the leader to see all participants at the same time. The

leader should travel in the opposite direction of the circle in order to maintain eye contact and monitor participant exertion. It is also harder to copy performance during the learning process as the person you are facing is moving in the opposite direction. This can be confusing for individuals with perceptual disabilities. A leader working inside a circle formation should be sure to mirror demonstrate for each quarter arc of the circle.

- *Line.* Having participants all line up in fairly even lines, facing the same direction, arranges the group in a manner for the leader easily to see everyone and determine who is having difficulty. Individuals need to stagger their positions just enough so everyone can see the leader and the leader can see them. For movement from place to place, or across the floor individuals working at the same intensity should be in the same line. All individuals in the same line must move or all must stay in place, and this must be planned ahead of time.
- *Random.* Allowing participants to stand anywhere takes the least amount of arranging; however, it is also the most dangerous. It allows people performing at a variety of intensities to mix; if the group always remains in one place this is fine, but if the group moves from place to place, or across the floor, individuals are likely to collide with or impede others. Random formation also makes it difficult for a leader to monitor performances and move among the group to give assistance.

Regardless of formation, all participants should be able to see and hear the leader. Individuals with sensory or perceptual disabilities may need to adjust their positions to do this. In a room with mirrors, seeing the leader can be especially confusing if the group faces the mirror. A leader standing in front of a blank wall is easier to see.

Music

The heart and soul of aerobic dance is in the music! It establishes mood and sets rhythm. In its most stimulating form, the beat drives participants to action and sustains energy throughout performance. Appropriate music can lead to an excellent workout session; inappropriate music can doom a session to failure.

Sometimes selecting music is not a matter of choice. Using video format means accepting music already on the video. If possible, listen to a video before purchase. Check the list of musical selections; review tempos and duration citings for selections. Determine whether music is by one instrument or several. Has it been recorded by a quality studio? Do not assume a commercially produced exercise video is a quality product. Look for experienced names in the business if a tape must be bought untried.

Using a prerecorded audio format also means accepting music already on tape or disc. Ask the same questions as for video format. In addition, check how the audio format is to be played. If possible, use a tape deck or disc player with variable speeds. Beginners and individuals with movement disabilities may need a slower tempo, especially during the learning phase of routines. A routine can be learned at slow speed and then, by using a variable speed playback unit, speeded gradually as participants become more proficient.

Check out the speakers. Is verbal information clear, or does the speaker garble the voice? Can voice parts be heard distinctly over the music during instructional parts of the presentation? Is it possible to adjust bass and treble? Some individuals with auditory disabilities can hear better if treble and/or bass can be adjusted and/or if voice and music can be balanced. Is it possible to place speakers exactly where desired in the room or jack into built-in room speakers? Where a sound comes from affects an individual's ability to hear and understand.

Hearing directions and verbal cues over the noise of the music may be difficult for individuals with sensory or perceptual disabilities. Too much noise and/or auditory information coming in at one time can be confusing. It might be helpful to talk through exercises and routines first, without music. Playing music softly when verbal instruction is being given might be better than keeping music at the same level as verbal direction. Using a microphone with a volume control separate from the volume control for the music can accomplish this. Listening to the music first, before adding specific exercises, can help participants establish beat and tempos before beginning routines, and allows for greater concentration on verbal directions.

If prerecorded video and/or audio formats are not used, the leader must choose musical selections appropriate to the aerobic dance routines. When selecting music to go with original routines, keep the following factors in mind:

- Warm-up and cool-down music differs from music used for the main part of the workout. Warm-up music should be upbeat and yet not as intense as

that used for the main workout. It should encourage stretching and gradual rise in heart rate. Cool-down music should be gentle, relaxing, with a smooth flowing rather than a driving beat. This is the quietest part of the session, reestablishing normal heart rate in a calm and unhurried manner.

- Workout music should be continuous, with one selection immediately following another.
- The beat should be steady and easily identifiable. Music with indeterminant rhythm is difficult to follow and move to in an organized fashion. A strong beat keeps the group together and provides cues for movement.
- Loud is not necessarily better; today's amplifiers have capability to damage hearing. Increased amplification tends to distort sound and beat, but individuals with auditory disability can often "feel" a loud sound through vibrations of the floor and air around them. Moderation usually brings best results for all.
- Music and exercises should fit together. Doing exercises or dance steps that work in 4s does not fit music written in 6/8 time. Practice ahead of time to be sure music fits movement.
- Consider participants when selecting music. How old are they? What are their tastes in music? While much music appeals to all ages, specific population groups have their own favorite musical styles.
- Avoid extremes in musical selections. If musical preferences are not known, select items of general appeal. Aerobic dance class is not the place to attempt to alter musical tastes. If participants can't stand the music, they won't be back to participate.
- Involve participants in selection of music. Ask them to bring their personal records or tapes to class.
- Workout music should be fun! Lively music makes you want to move; aggressive, powerful, driving, active are all adjectives that come to mind when describing music for aerobic dance. While it is possible to find music specifically recorded for exercise (complete with notated tempo), regular popular music does very nicely.

Routines

Aerobic dance routines are combinations of exercise and dance steps. Between routines participants should actively review steps, movements, and patterns to follow. Students learn to pace themselves and keep moving for an entire class session (Sorensen, 1978a, 4).

Each session begins with warm-up. Prior to anything else in the session, raise the heart rate. Then gentle stretching and joint range of motion exercises ready the body for more strenuous activity. During a 45 minute session, warm-up and initial stretching should take 5 to 10 minutes. As movement should be continuous throughout the session, determine what gentle movements should be maintained during any announcements, introductions, explanations, and changes of formation.

During warm-up such movements might be:

- Walking (walk within own space, walk in group circle, walk in place).
- Gentle shaking (shake hands, shake arms, lift and shake a leg).
- Weight shifting (shift weight from foot to foot, side of seat to other side of seat).
- Stretches (reach for ceiling, alternate reaches side to side).

Be sure the warm-up activates all major joint areas and muscle groups. Caution participants to control movements and increase tension gradually.

Warm-up is followed by approximately (based on individual and group needs) 30 minutes of continuous rhythmic activity—aerobic dance.

A bridge is a movement done between routines to maintain the continual movement aspect of aerobic dance. Level of performance intensity during routines should match the level of intensity during the bridge. Someone performing high intensity routines may want to run during the bridge; someone performing low intensity routines may want to walk slowly or just shift weight during the bridge. Individuals using crutches, walkers, or wheelchairs can modify bridging movements as indicated.

Bridging activity (and alternatives where a modification might be necessary) might include:

- Walking at a brisk pace (or wheeling, or rapid arm pumps).
- Jogging in place (or leg lifts using a walker for support).
- Jogging in a circle (turning in place, moving quickly in circle formation).
- Running in a circle (higher level of intensity—fast performance of chosen movement in group circle).
- Arm swings (shoulder shrugs, crutch lifts in seated position).
- Marching in place with high knee lifts (seated knee lifts, arm punches).
- Moving through new dance steps or exercises before they are used in routines to follow.
- Skipping.

Encourage participants to pace themselves so they can maintain continuous motion. Alter level of

intensity as needed. Either perceived level of intensity or heart rate monitoring can be used to assess the level of intensity. Aerobic dance leaders need to be sensitive to exertion levels of participants, cautioning those who seem to be overexerting and assisting all in establishing their personal comfortable pace.

A typical aerobic dance workout consists of six to eight dance routines in a 30 minute period (Sorensen, 1978a, 4). Beginners may only get through two or three routines, as much time must be spent teaching exercises and dance steps. As proficiency increases, participants can dance several routines they know and learn only one or two new routines each session. Mixing learned routines with new adds versatility and flexibility to each session. Performance of learned routines creates a higher intensity workout than teaching new routines.

After warm-up, an aerobic dance workout might follow this arrangement:

1. Move following a circle formation.
2. While moving, listen to leader give instructions for continuous activity by defining what the bridging activity is to be. If the formation is a circle, moving in a circle is to be the bridging activity. Those wishing to walk briskly should move in the outer circle, those moving at a lower level of intensity should move in the inner circle.
3. Stop moving in circle, face center, continue movement of shifting body from side to side (change weight or walk in place—knee lift determines level of intensity). Leader demonstrates new exercises/dance steps to be learned for coming routine.
4. Participants perform new items as demonstrated by leader. Between each item continue bridging movement (weight shift, march in place).
5. Continue movement in place and listen to music for next routine.
6. Perform new routine. After completing routine, go right into bridging movement. Do not stop. Continue bridging movement as new directions are given.
7. Repeat the above sequence until end of workout.

Once a group has learned several routines, learned routines can be interspersed between teaching new routines. For example:

warm-up
bridging movement
known dance routine
bridging movement
learn new routine (sequence above)
bridging movement
dance another known routine
dance a third known routine (no bridge here, one routine goes right into the next)
cool-down

Cool-down follows the workout. This five to eight minute time is for relaxation and readjustment back to normal after intensity of exertion. Cool-down can be a low intensity routine and/or gently stretching of all major joint areas. Sorensen (1978a) suggests that students can obtain their recovery heart rates and use that heart rate to dictate future activity intensity. Five minutes after the workout, students should count heart rate for 15 seconds and multiply this number by four, obtaining recovery heart rate. If the heart rate count is greater than 120 after cool-down it is advisable for a student to dance at a lower level during future aerobic dance sessions (Sorensen, 1978a, p. 4).

Some individuals with disabilities may have difficulty in counting their own heart rates. A workout buddy can do this for them or the instructor can provide assistance.

Teaching Techniques

Aerobic dance is more likely to be successful for everyone if the leader:

- Is enthusiastic about the activity, continually projecting the idea that everyone can and will have a good workout and a good time.
- Dances the routines with the group, providing a visual good example.
- Encourages everyone to participate and believes everyone can be successful.
- Can individualize routines so each participant performs at his/her own level of intensity (every exercise, movement, or dance step should have three attainable levels of intensity).
- Can individualize routines so there are alternatives to specific exercises or steps (a shoulder shrug can be an alternative to an arm circle; a shift in weight can be an alternative to marching in place).
- Uses nonspecific movement language, e.g.:
  - "Move" in a circle rather than "walk" in a circle allows everyone equal success.
  - "Reach" to the "side" rather than "put your arm straight out to the left" allows options for individuals with movement disabilities.
  - Stretch to one "side" rather than stretch to "left" or "right" removes directional confusion.
  - Reach "up" rather than "put your arm over your head" allows a participant with limited range of motion to participate and be successful.

- Encourages people to be creative and be themselves. Participants can devise their own alternatives to movements they find difficult or impossible. It is more important for someone with no arms to substitute lifting legs for arm circles than just to stand still and not participate. Participants should be encouraged to think up their own substitutions. Leaders can offer suggestions if necessary. Continuous paced movement is the goal, not perfection of a particular exercise or step.
- Gives specific feedback on how to improve movements being performed and how to correct movement errors that detract from obtaining maximum benefit from activity.
- Has audiovisual equipment ready and functioning well throughout the session. Bridging activities are meant to bridge briefly between routines, not sustain the group while the leader searches a tape for just the right music or scans the video for the place to start. Establish video counter positions prior to class for easy access to desired tape sections.

Modifications of Aerobic Dance

Most individuals with disabilities need little or no modifications to participate successfully in regular aerobic dance programs. The nature of aerobic dance, with its variety of intensities and levels of performance and its potential for individualization of movement, makes it an ideal activity.

Modifications may, however, be necessary in some situations, if a participant is not having success in the activity. Signs of difficulty might include:

- *Lack of participation.* Staying still rather than maintaining continuous movement.
- *Negative verbal comments.* "I can't do this." "This is too hard." "You're going too fast."
- *Negative facial expressions.* Looking confused or angry is often a signal all is not well.
- *Physical signs of overexertion.* Being out of breath, skin color change, extreme sweating.
- *Injury.* Aerobic dance should not cause injury. Reports of pain, during or after workout, collisions with other participants, or specific muscle strains or sprains are signs of a problem.

If any of these signs occur there are various modifications a leader can make to increase successes for participants, including:

- Ask individuals what they think the problem is, why they are unhappy or having difficulties. Often individuals can provide clues to their own needs.
- Change intensity of workout. Some participants may not understand how to change intensity themselves. They may be under the impression they have to do what everyone else does, or what the leader does. It might be necessary to have three leaders, one performing at low intensity, one at moderate, and one at high. Participants should be instructed to copy the leader at the intensity level most comfortable for them.
- Teach participants how to modify exercises. Certain substitutions can become standard. For example:
  - Facing, turning, leaning in a particular direction, even if unable to move in that direction when others move.
  - Shifting weight, leaning, moving body parts in alternation as substitutes for marching/jogging in place.
  - Moving any body part in a circle as a substitute for turning the body in a circle.
  - Moving arms instead of legs, and vice versa.
  - Using hands/arms to move legs if legs cannot move by themselves.
  - Substituting seated activities with chair support for reclining activities with floor support.
  - Moving hands or arms from elbows down instead of shoulders.
  - Moving feet or legs from knees down instead of hips.
  - Moving head instead of trunk.
  - Using one side of the body at a time instead of both.
  - Performing only one part of the exercise rather than all parts, just the arms for a jumping jack, for example.
  - Substituting a totally different exercise, arm swings for legs swings for example.
  - Changing number of counts to the movement, thus altering number of repetitions.
- Rearrange the group, placing the individual having difficulty in close proximity to the leader where special assistance can be given.
- Reassess how visual and auditory information is presented. Maybe the individual cannot see or hear clearly enough to understand. Altering format may be needed. Closing drapes, facing away from mirrors, turning down an amplifier all can make a difference for someone with sensory impairment.
- Let everyone know it is all right to be an individual. Total body exercise is important—group conformity is not. Individual involvement and personal enjoyment are important—critical performance isn't.
- Slow speed of the music. Variable speed playback equipment is useful, particularly during initial learning stages of routines.
- Give greater attention to teaching routines and do not rely on everyone's ability to watch and pick up on leader demonstration. Sometimes people need to talk through a movement pattern, move through it slowly, and then gradually take it up to tempo.

- Shorten workout time. A workout of 45 minutes might be too long for some individuals with disabilities, particularly during the frustrating beginner phase. Start with a short session and gradually work up. Allow participants to start cool-down before the rest of the group if they feel they are ready to end the workout. Don't skip cool-down. While the music might be inappropriate if an individual starts early, cool-down is an important part of the workout and should be completed before a session ends.

Aerobic dance can be modified to fit anyone's needs. Creativity helps. So does knowledge of exercise and dance performance. However, the greatest contributor to success for the activity modification process is desire, desire to share benefits of an enjoyable activity. If an aerobic dance leader truly believes in the many benefits of aerobic dance participation and has the desire to share those benefits, that leader can facilitate successful participation for everyone, including anyone who just happens to have a disability.

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Water Exercise

Sharon Burgess Tim Davis

Water exercise encompasses a variety of activities accommodating exercisers of all abilities and needs. Running and walking, strengthening and stretching exercises, aerobics and other fitness activities take on new dimensions when performed with support and resistance of water. While swimming ability is not required, it does increase safety and confidence in water.

People often associate exercise in water—hydrotherapy—for individuals with disabilities with slow, passive range of motion activity focused on maintenance of existing function or rehabilitation. Exercises are often directed by a licensed physical therapist, are usually medically based or prescribed, and end after the client has completed the aquatic therapy prescription. Water exercise, however, aims to develop health-related fitness for everyone, disabled or not. While it is recommended that medical advice be sought prior to initiating participation in water exercise, activity is not necessarily prescriptive. Direction is provided by an aquatic exercise professional rather than a licensed therapist.

Why Water Exercise?

Water exercise offers everyone, regardless of ability, many advantages. Water is 800 times heavier than an equal volume of air, so water offers resistance to movement in all directions. As muscles work against resistance, they gain strength and tone. Water resistance can be increased or decreased by changing speed of movement through water or amount of body immersed in water, or by changing limb or body position. For some individuals the slightest resistance will offer potential gains. This resistance may be the only way to provide them with strength exercises.

Buoyancy also offers advantages for all individuals. Water supports the body, lessening impact and risk of impact-related injuries common to overuse or ballistic movements. When immersed in water, a body weighs only one-third to one-tenth of what it weighs on land. This increases freedom of movement and allows performance of activities that may be difficult or impossible on land. By immersing the entire body, reduction of stress to joints and muscles allows pain free movements. This alone will help motivate individuals with disabilities to exercise.

Water exercise is a social activity. Everyone, regardless of ability or fitness level, exercises together and can be encouraged in workouts to get to know one another. With social interaction, exercise becomes more fun, less work. If you enjoy both activity and support of new friends, it's easy to stick to the program.

Water exercise eliminates heat stress in summer and offers a reprieve from winter's chill. If you don't like exercising in hot or cold weather, you can escape these temperature extremes in the pool.

Benefits of Water Exercise

Benefits of water exercise vary depending on program emphasis. Aerobic, stretch-and-tone, developmental skills, or total fitness can be emphasized, for example. Health-related fitness components of flexibility, muscular strength and endurance, cardio-

respiratory endurance, and body composition may show measurable improvements after 8-12 weeks of an individualized water exercise fitness program.

Legal Basis for Adapted Water Exercise

Aquatic programs are available in most schools, or are offered through the community as recreation. Until recently, most individuals with disabilities were either excluded from mainstream aquatic programs or participated only in rehabilitative aquatic therapy. The fact that most regular physical education teachers have less than 3 credit hours in adapted or special education illustrates why few individuals with disabilities receive aquatic education within their physical education program (Davis & Surburg, 1991). Unless prescribed within the IEP (individualized education plan), most individuals with disabilities have not experienced this exercise venue. Community-based programs when available were in segregated settings and appropriate accessibility limited those who could benefit. This unfortunate circumstance is undergoing long overdue change.

The recent passage of the Americans with Disabilities Act, Section V, Accommodations, defines public access and requires that all recreational facilities (including pools) be accessible. It is the intent of this law to provide appropriate access for individuals with disabilities "including access to pools and other recreational facilities." Aquatic programs including water exercise activities, school or community-based, must be open and accessible to individuals with disabilities.

Medical Clearance and Considerations

According to the American College of Sports Medicine (ACSM) guidelines, medical clearance prior to beginning a vigorous exercise program is not generally necessary for healthy males under age 40 and healthy females under age 50. All exercise participants should, however, complete a written health self-report (see next page).

For older adults or people of any age with disabilities or known health concerns, the ACSM advises the individual to seek medical clearance and, if necessary, complete an exercise stress test prior to participation.

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Health History Report

Name _____ Age_____

Date of last medical checkup _____

Although exercise participation is generally safe, and can enhance your health, an individual's reaction to exercise cannot always be predicted. Therefore, there are risks involved in any vigorous exercise program. These include fainting, abnormal blood pressure or heart rhythm, and rarely, heart attack. Because of these risks, it is important that you complete this questionnaire honestly. If you are a male over 40 or female over 50, and have not been previously exercising, you should consult your personal physician before starting an exercise program.

Please check any conditions that apply to you:

___ Heart problems
___ High blood pressure
___ High cholesterol or triglycerides
___ Chest pain
___ Diabetes
___ Arthritis
___ Shortness of breath
___ Fainting
___ Stroke
___ Family history of heart disease
___ Smoker
___ Pregnant
___ Asthma
___ Severe headaches
___ Injuries, joint, muscle or bone problems (list):
_____

Please list any other conditions that might affect your ability to participate safely in exercise _____
_____
__

Please list any medications you take regularly _____
_____
__

Signature _____ Date_____

Exercise Principles and Guidelines

The rule of specificity states that benefits of an exercise depend on type of exercise done and affect only the body part or system exercised. For example, push-ups are a fine exercise for enhancing strength of deltoids, pectorals, and triceps, but do nothing for biceps or latissimus dorsi. Push-ups increase muscular endurance but not cardiorespiratory endurance. An instructor must carefully select exercises with individual needs and desired outcomes in mind.

The overload principle states that in order to improve, a higher-than-normal effort must be applied. Overload involves three facts, summarized as the FIT prescription:

Frequency: how often an exercise is done (in days per week and repetitions per session).
Intensity: how hard to work.
Time: how long an exercise is done.

The prescription for cardiorespiratory endurance is to do continuous, rhythmic exercise 3-5 days per week at a target pulse of 60-75% intensity for 20-30 minutes.

To stimulate strength improvements, use exercises which push and pull against water resistance or body weight. These should be done three days per week, every other day for improvement, or at least two days for maintenance. Effort should be intense enough so muscular fatigue is experienced in about 1 minute. A program of two to three sets of 8-12 exercises (or 3 sets of 6 exercises if only doing upper or lower body) will develop muscular endurance.

To enhance flexibility, move joints through their full range of motion so muscles are stretched at least 10% over the resting length and held at the point of tension (not pain) at least 20-30 seconds. Stretching is easiest and flexibility increases are greatest when muscles are allowed to cool in a stretched position, such as at the end of the workout.

Be aware that flexibility varies from joint to joint as well as from day to day. Some individuals may have a limited range of motion. Never force a joint beyond the point of stiffness or pain.

The Three-Part Workout

A water workout for individuals with disabilities, as in any fitness program, should contain three parts: a warm-up, conditioning period, and cool-down. A thermal warm-up should speed adjustment to water temperature, with gradually increasing intensity of large muscle movement. Three to five minutes of jogging in place, aerobics to music, follow the leader exercises, circle running, water walking, or a game of tag with 2-3 people "it" are ideas. Two to three minutes of stretching as preparation for activity can be done after a thermal warm-up, but working for increased range of motion should be saved for the cool-down.

The conditioning period will last 20-40 minutes and can emphasize aerobic fitness, muscular fitness, or both. During aerobic exercise, it is a good practice to monitor heart rate intensity periodically, especially for beginners. This enables exercisers to learn what effort level maintains their target pulse.

A cool-down of 5-10 minutes allows time for socializing and for recovery. After a vigorous workout, a cool-down can begin with lower intensity activity, such as water walking or toning exercises, and can end with stretching.

Water Exercise Equipment

Most equipment needs when programming for individuals with disabilities are the same as for the able-bodied. Some individuals with physical disabilities may require specialized flotation devices to assist head flotation but allow free movement of upper body. To identify types of floats needed, instructors together with students must determine individual objectives. For example, if the objective is flexibility and strength a float may be needed to hold the head above water while the exerciser pushes, pulls, stretches, and reaches. If the goal is cardiorespiratory endurance then a float such as a pull buoy or kickboard may be all that is needed. The key is to individualize objectives, then adapt equipment to produce desired performance.

A pace clock or waterproof watch with a second hand is necessary for monitoring pulse and workout time. Be sure that all participants monitor their heart rates, assist those who need assistance, and teach

those who do not know how. Goggles are useful for eyes bothered by pool chemicals or to ensure contact lenses aren't splashed out. Goggles are not necessary if workouts keeping the head above water are planned.

While water exercise may be done without any extra equipment, aids listed below are inexpensive, readily available, and add variety to workouts. After strength and endurance increase beyond beginning levels in water exercise, you may wish to add resistance and try exercises with these devices.

- Pull buoy. A pull buoy consists of styrofoam cylinders held together by a nylon cord. It is designed to be placed between legs to support them while a swimmer works on arm strokes. It can also be used to add resistance to toning exercises in the water when worn on a leg or arm. These floats may be adapted to assist paralyzed limb(s).
- Hand paddles. Flat plastic squares designed to be worn on the hand add resistance to arm strokes.
- Kickboard. Kickboards are used by swimmers to support the upper body while they practice kicks. Water exercisers may use them to add support or resistance to exercises. They may also be used as a stabilizer for gait training (walking, jogging).
- Plastic jugs. Used empty, these give you sufficient buoyancy to exercise suspended in the water. Filled with 1-2 pounds of water (a pint is a pound) they can be used as weights for upper body exercises. While they are free, a drawback is that the handles tend to rub and irritate your skin. Jugs may also be cumbersome to use with upper body exercises.
- Swim fins. Fins give extra propulsion to kicks. These may be used in some leg exercises for greater resistance.

Specialized flotation devices can be adapted from buoys, kickboards, jugs, paddles, or running belts. To order specialized equipment see Danmar Products in the list of resources.

Safety and Water Exercise

When Not to Exercise; When to Stop Exercising

Participants experiencing some conditions, especially during inflammatory stages (e.g., rheumatoid arthritis) should not exercise. Also, contagious infections (e.g., ringworm, head lice) should be medically cleared prior to individuals getting in the pool.

It is generally OK to exercise if you have a mild head cold but otherwise feel fine. Do not exercise if you have flu or fever, are overtired, or feel faint. Likewise, stop exercising if feeling nauseated, extremely short of breath, lightheaded, or dizzy. Instructors should monitor participants' facial expressions, color, and body language for clues as to how they are feeling. Talk to participants and ask; never assume they are feeling their best.

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Pool Safety

- Have a lifeguard on deck at all times.
- Make sure the facility contains all required safety and rescue equipment; know where it is and how to use it.
- Have an emergency plan.
- A telephone should be in the immediate area with posted emergency numbers; also list emergency phone numbers for participants requiring medical clearance and keep these in participants' files for quick and easy access.
- Pool decks should be clear of all loose obstacles for increased accessibility of wheelchair users and visually impaired participants.
- Electric wheelchairs must be turned off and put away from direct water sources; release belts and push like a manual chair to assure safety.
- Make sure electrical outlets in the pool area have a ground fault interrupter.
- Orient visually impaired individuals to the pool prior to entry and keep a radio or metronome on the deck at the shallow end so they can locate shallow water. This will help to reduce fear of first-time participants with visual impairments.
- Monitor pulse during workouts and encourage students to adjust exercise intensity to their target zone.
- Observe your students when leading exercises and ask how they are doing. A red face, shortness of breath, or strained expression will cue you to decrease intensity.
- Make students aware of guidelines for when to stop exercising.

For more extensive information on pool safety, consult texts listed in suggested readings.

Individualizing Workouts

How can an individual with a disability fit into your water exercise class? Individualizing workouts or portions of a workout for specific abilities and needs is key to a successful program. For example: individuals with visual disabilities can do the same workouts as the rest of the class, but teachers may need to verbally describe exercises, rather than simply demonstrate. A paraplegic, on the other hand, needs an individualized workout if the class will be doing shallow water running. Talk to your students; find out what you can do to assist them.

Individuals with disabilities have the same basic fitness needs as able-bodied individuals. Providing a program that is fitness-based, not therapeutic in nature, will help change attitudes that individuals with disabilities cannot participate in vigorous water exercise.

What special considerations do you need to be aware of when programming for individuals with disabilities? Specific disability areas are given below, followed by practical pointers to assist in meeting individual needs. Use these pointers to individualize water workouts based upon sound exercise principles. Individualize instruction where needed, but always first individualize fitness objectives and expected outcomes.

Cerebral Palsy

- Breath control must be a priority. This will help develop endurance and water independence. Blowing bubbles or blowing a ping-pong ball across the water surface into a goal can improve breath control.
- Use flotation devices that allow restrictive free movement. A head float and combination stabilizer bar allow for free movement in a relaxed manner (see Danmar Products).
- Work on repetition and long smooth patterns for spastic CP. Such individuals can learn to inhibit some flexor and extensor reflexes. By physically assisting with flexion, quality movements can be performed with free limbs. This will require one-on-one assistance.
- Spastic swimmers have low body fat and displace little water. They sink! They must wear a flotation device or be water safe.
- For independent CP swimmers, deep water running vests allow free movement in a vertical position and enhance balance skills that transfer to dry land walking.

- Many individuals with CP, although nonverbal, may not be developmentally delayed/mentally handicapped. Teach normally and look to their eyes for understanding. Some nonverbal CPs use eye movements, right or left, to signify yes or no or may use a communication board. Talk to the classroom teacher, parent, or care provider about ways in which to communicate effectively.

Juvenile Rheumatoid Arthritis

- Water temperature is vital for flexibility and motivation. Pools should be 88 to 92 degrees and air temperature should remain within 5 degrees of the water. Too hot or too cold is contraindicated.
- Never exercise inflamed joints.
- Deep water activities with flotation devices (aqua joggers or running belt) offer free movement without weight bearing stress.
- Exercise at moderate intensity in shallow water activities keeping body submerged to the shoulders.
- Encourage joint movement through as complete range as possible. Keep limbs submerged. Never force a joint into pain. Participants should "Listen to their body."
- When entering the pool by ladder, always descend with the weaker or most painful leg and exit with the stronger leg. Use a pool lift if necessary to conserve energy, or to eliminate stressful movements that can cause inflammation.

Muscular Dystrophy

- Practice breath control to maintain vital lung capacity and decrease residual lung volume. This can be measured by having the individual blow up a balloon taped to the end of a straw. Measure the circumference of the balloon after each time to chart performance.
- Utilize a head float and combination stabilizer bar to promote free movement. Recover arm strokes underwater to increase resistance and maintain strength.
- Be aware that some individuals may be incontinent. Make sure they utilize necessary precautions (plastic pants, toileting, etc.). Most individuals will be well aware of this, so it should not be a problem except for children.
- Utilize safe methods of entering and exiting the pool. Hydraulic lifts, hoists, slides, and ramps allow for easy access in and out of the water. Exercisers will be less able to assist with transfers after the workout than before.
- Always ask before attempting a transfer, as shoulder girdle structures may be too weak to support lifting. Participants usually know what transfer technique works best for them.
- Watch for scrapes, cuts, and abrasions around knees and feet or other areas with sensation loss. Utilize water socks for knees, elbows, and feet.

Spinal Cord Injuries

- Utilize safe methods of entering and exiting the pool. Hydraulic lifts, hoists, slides, ramps, and mats on the edge of the pool can make transferring to the pool deck and into/out of the water easier. Place all wheelchairs out of direct sun and out of direct walking path on pool deck.
- Watch for scrapes, cuts, and abrasions around the knees and feet (or areas with little or no sensation). Be aware of the condition of these areas and protect them by using knee socks and water socks.
- Utilize flotation devices (running belts or vests) that maintain a person vertically in the water. Use caution when applying floats; some may hinder performance. Paralysis changes the centers of gravity and buoyancy. A vertical position may be unstable. Balancing vertically takes practice.
- Adapt the stroke or movement to the individual; e.g., leg and knee workouts can be adapted for the paraplegic so as to include them in that exercise.
- Incontinent swimmers must take appropriate precautions: urinary bags, plastic pants/shorts, toileting, etc. Most spinal cord injured individuals are very independent and will not need to be reminded.
- High level spinal cord injured (quadraplegics and T1 through T6) participants may have more success by training in intervals due to rapid fatigue caused by poor blood circulation. Watch for lightheadedness and make sure they are water safe.

Visually Impaired

- The visually impaired must be oriented to the entire pool environment, which may include: pool deck, locker room, design or shape of the pool, edges and tile texture, as well as depth orientation (walking from shallow to deep end determining angle/break into deep water).
- Utilizing partners during workouts can minimize risk of injury. A strategically placed lane line for running is another useful aid.
- A music speaker on the pool deck toward the shallow end will help to overcome fear of losing orientation in the pool (deep end from the shallow).
- When teaching a movement, clearly describe the motion as you demonstrate the activity, giving the joint and angle in which the movement will occur.

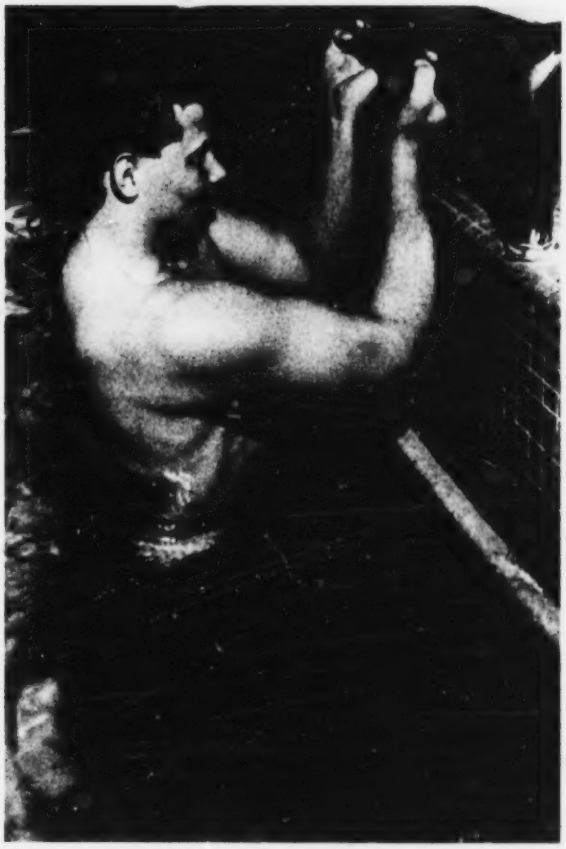
Hearing Impaired

- Teaching styles or methods may have to be adapted. Utilize the chalkboard, hand signals, physical dem-

onstrations, and eye contact. You may also use stations with written or visual descriptors.
- Hearing impaired individuals may have a balance problem. Adjust exercise if needed. Many activities can enhance balance as well as fitness.
- Develop predetermined signals for changing to another activity, e.g., a red hand paddle, predetermined hand signal, holding a kickboard high overhead, or buddy system).

Amputees

- Adapt to the individual based upon the desired performance. Ask their assistance as to what they can do and what they feel comfortable with.
- Single and partial arm amputees utilize an underwater recovery with amputated arm/stump, while breathing on the strong arm/complete arm side (during swimming).



- Single and partial leg amputees can use a scissors kick.
- Run in deep water.
- Bilateral amputees may have trouble maintaining a vertical position.

Seizures

If an individual is prone to seizures, you must be aware of this condition. A doctor's referral is necessary prior to water exercise. Most seizure disorders are controlled by medication and pose little threat when properly monitored. A person who has frequent seizures must work with a partner in the pool. Prepare an emergency plan with this individual so in case of emergency, the appropriate person(s) may be contacted.

- Be aware of any physical warning signs that might forewarn or confirm a seizure (e.g., a blank stare, motionless, lost or confused look).
- Seizures that occur in the pool must be handled quickly to avoid ingestion of water into the lungs. Support the swimmer's head above water and wait for the seizure to subside before transferring the individual to the pool deck. If a seizure occurs in water, seek medical attention to assure the individual's safety.
- When seizures occur in the locker room or on the pool deck minimize physical injury by assisting the individual to the ground, removing any chairs, benches, etc. that pose a threat to the individual, and cushion the head with padded material. Only move the individual if an immovable object poses a threat to their physical well-being.

Hydrocephalic

- Utilize head float and/or stabilizer bar for balance.
- Balance skills should be a priority.
- Teaching methods may have to be simplified for comprehension and retention of basic skills.

Developmentally Delayed (Mentally or Emotionally Disabled)

When teaching the developmentally delayed, positive reinforcement, consistent teaching methods/styles, and repetition are the keys to successful programming. If possible, determine if the students are currently working on any behavioral changes, language skills, body postures, or social skills prior to teaching. This information may be obtained from the parent, classroom teacher, or home care provider.

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This will be very useful during class teaching time as well as promoting collaboration across disciplines.

- Utilize group participation games/skills.
- Set realistic goals and expectations.
- Model the activity or desired performance.
- Repetition is the key.
- Use positive social reinforcement to emphasize "good" work.
- Have FUN with games and activities.
- Utilize flotation devices to overcome fear of water.
- Monitor heart rate.
- Modify teaching directions to accommodate cognitive abilities.

Cardiorespiratory

- Monitor heart rates before, during, and after water exercise, and maintain an appropriate level as prescribed by physician. Doctor referrals are required prior to exercise.
- Avoid breath holding, e.g., underwater distance swimming.
- Monitor facial/skin color and any signs of chilling.

Obesity

To assist with obesity management, identify if the participant is in a comprehensive weight loss program. If so, determine how the aquatic fitness program can support the management plan. Programming concerns include:

- Monitor heart rate.
- Determine medication(s).
- Be alert for excessive buoyancy in water and for galling and chafing between thighs and other skin area.
- Joint stress will be reduced in water.
- There may be some social fear of wearing bathing suit in public.

Asthmatic/Exercise Induced Asthma (EIA)

- Aquatic activities are the exercises of choice.
- Use training in intervals; 5 minutes vigorous, 5 minutes rest, etc. is recommended.
- Participant should have medication available.

Aquatic exercise can benefit everyone. Success, motivation, and self-confidence are easily established in an aquatic setting and are transferable to daily living and social skills. When programming for individuals with disabilities, one must take into account many special considerations. To assure the safety of participants and to meet individual needs, it is vital to have a working knowledge of disability areas or have available a comprehensive resource for assistance. The goal is to adapt equipment or modify instruction to provide a positive learning environment. Mainstreamed settings can be challenging for the teacher as well as for the students involved. Depending upon the ability of the disabled swimmer, water safety, independence, and exercise are the keys to a safe and successful integrated water exercise program.

Contraindicated Exercises

Many exercises used in aquatic fitness classes have been adapted from other activities, such as gymnastics, dance, yoga. Current research indicates that some traditional exercises either do not produce the effect we desire or they carry more risk than benefit for the user. For example, side bends do not tone the waist, and they put stress on the lower back. One or two repetitions of an exercise may cause no problem, but repeated use over a period of time can increase risk of injury. Our challenge is to reduce the use of high-risk exercises (even if they are old favorites) and increase the use of more effective, safer movements.

Here are some exercises to avoid:

- Back hyperextension, often seen when doing standing exercises. To avoid this, keep abdominals tight, hips tucked under, and knees relaxed to protect the back.
- Standing toe touches. (Do sitting instead.) Forward flexion from a standing position puts great stress on the lumbar vertebrae.
- Full head rolls. (Do half head rolls toward the front instead.). Rolling the head fully back compresses cervical vertebrae.
- Straight leg lift above 90 degrees. (Raise no higher than 90 degrees.) This can irritate the sciatic nerve.
- Spinal rotation beyond 40 degrees with hips stationary. (Let hips rotate.) Side bends, waist twists, and circling do not reduce the waist but do stress lumbar vertebrae.
- Deep forward flexion with rotation, e.g., twisting toe touch. (Do abdominal curls for the waist instead.) This is probably the worst for producing back injury.
- Double leg raises. (Do abdominal curls.) These overstress and tighten the hip flexors, increasing spinal lordosis and risk of back strain.

- Knee hyperflexion (e.g., hurdle stretch) overstretches knee ligaments.
- Fast, jerky movements do not stretch or tone, but they can strain muscles and joints. Do all movements in a controlled manner. Stretches should be sustained; do not bounce.
- Avoid joint lockout. This transfers stress from muscle, which you are trying to tone or stretch, to joints and ligaments, which should not be stretched. Movements can be taken to full extension without lockout if done with control.

Some people can do these moves their whole lives with no ill effect. Others sustain injury after only a few repetitions of a risky move. In working for fitness, a person should not have to pay the price by risking injury. It is best to err on the side of caution when working with individuals with varied physical abilities.

Water Exercises, Activities, and Programs

Many different exercises and activities have been developed for water fitness programs. Some examples are listed below; others may be found in books listed at the end of this article under Suggested Readings.

Thermal Warmup. Try one of these each day to start your workout. Several of them can be expanded to constitute all or part of an aerobic conditioning bout.

Circle Run. Direct the class to form a circle in the shallow end of the pool, near the walls, and between chest and waist depth in the deep end. Walk or run, using arms to pull. Stop briefly, turn around, move against the current. Repeat. Stop, go backward/sideways, reverse direction to run against the current. Hop on both feet, one foot, switch. Walk/run using different arm pulls: crawl stroke, breaststroke, butterfly. Have class spiral into the center, then lead them out again or run/hop to the middle and back.

Line Tag. Run widths of the pool. Starting at one side, walk or jog to the first line on the bottom of the pool, touch it with your foot, then jog back to the wall. Run to touch the second line, then back, third line and back, etc. Finally go wall to wall, and work back down—last line then back, next to last, and back home.

Follow the Leader. With students working in groups of four, each person leads exercise for one minute. Ideas: Run, walk, skip, hop, jump (forward, backward, sideways). Tread water or hold to the wall and do swimming kick.

Tag. Select one person to start as "it" for every 6-7 people in class. Give each person who is "it" a pull buoy, balloon, or something to hold so others know who is "it." When the person who is "it" tags someone, the new "it" takes the object and cannot tag that person back. Tell the class they will be playing tag as a warm-up game and the object is to keep moving. Rules: No holding onto the walls, sitting underwater in the deep end, or getting out of the pool. Go 4-5 minutes then call time and get into the workout.

Lane Run. Move up and down lane lines with different techniques, e.g.:

Lane 1: run forward, arms breaststroke
Lane 2: walk, taking big strides, heels touching the bottom
Lane 3: kick forward, touch toes
Lane 4: double foot hop, zig-zag over line
Lane 5: run-run-hop-hop
Lane 6: skip

Cardiorespiratory Endurance

Each of the ideas below can be used for one workout, or parts of each may be combined. Ideas include shallow and deep water walking, deep water running, circuit training, water aerobics, and bobbing.

Shallow Water Walking: Do 1-2 widths of the pool, over and back (forward, then backward), using each of the following movements:

High knee run
Run with heels high in back
Jumping jacks
Step kick low
Step kick high
Double kick low
Kick-touch toes

Kick backward, moving forward
Skip
Side kick moving forward or sideways
Touch with hand knee-knee, toe-toe
High-knee walk, clap under each knee

Shallow Water Running Intervals. The number and duration of running intervals can be set individually, or for the entire group. If the entire group is to do the same workout, individuals must go their own pace and monitor pulse.

Each running interval may be followed by a recovery interval or by an exercise. Those who finish the running segment early will spend more time in recovery or exercising.

Complete 4-8 widths each, then rest or do exercise, e.g.:

Running Interval	*Exercise at Wall*
1. Run forward	Flutter kick
2. Run sideways	Rear leg circles
3. Skip over, run back	Kick forward, touch toe
4. All face same wall, run forward/backward	10 pushups and jog
5. Run, alternate arm pulls: breast, back, fly, free	Hamstring stretch

Deep Water Running. This can be aerobically demanding and you may wish to use it for only part of a workout initially. Flotation belts may be used to help students maintain an erect body position (shoulders over hips) and for those who are not very buoyant. Confident swimmers will likely prefer to work without a belt. Beginners tend to lean forward into a swimming position and need to be coached to keep shoulders up with hips underneath. Quality of effort, not lap speed is what counts here.

Do one-two laps each, resting as needed:

Run forward, pull with arms underwater
Run backward, backpedal arms underwater
Run sideways, arms sidestroke
Run forward over, backward back
Repeat

Variations: Add an exercise to the end of each lap, e.g., 10 back pushups, double leg scissors, flutter kick 1 minute, etc.

After students have tried both shallow and deep water running, make a station for each, and either offer students the option to select a station or divide the class between the stations and have them switch after 10-15 minutes.

Circuit Training. Write exercises on 4" x 6" cards in indelible magic marker and laminate them or stick in ziplock baggies. Alternate vigorous with moderate effort. To add running or walking between stations, place even numbers down one side of the pool and odd numbered stations down the opposite side. Have students work in groups of two or three. Do each exercise for 1 minute and allow 15-20 seconds to switch stations. Repeat circuit if time allows. The following is an example of an aerobic circuit.

Left side of pool:	*Right side of pool:*
1. Jog in place	2. Standing front kick
3. Tuck jump	4. Forward lunge/push
5. Elbow-knee run	6. High knee skip
7. Circle run backward	8. Jog in figure 8
9. Jumping jacks	10. Flutter kick on wall

Aerobics. Students of varied abilities enjoy the variety and challenge of aerobics in the water. Music of about 120 beats per minute is easy to work with, and there are music services (see Resources) that can provide tapes with 30 minutes to an hour of music at a desired tempo.

You may wish to start out using this as a warm-up activity and work into longer sessions as you build an inventory of routines. Also, after students are familiar with the moves, they can team up in small groups and each lead for 1 minute.

Excellent information on choreography for water aerobics can be found in Ruth Sova's book titled *Aquatics* (1992).

Routine one

Pattern 1:	Pattern 2:
Jog in place 8	Jumping Jacks 4
Jog forward 8	Side kick 4
Jog backward 8	
Circle 8	
Repeat	

Repeat patterns 1 and 2 to end of song.

Routine two.

Pattern 1:	Pattern 2:
Twist 8	Run in a square:
Toe touch 4 moving forward	forward 4, in place 4, turn 90°
Twist 8	repeat 3 more times
Toe touch 4 moving backward	

Repeat patterns 1 and 2 to end of music

Fitness Fables. Tell a story and lead class through it physically as they travel up and down lane lines, circle, or move across pool and back, e.g., running from an alligator, jumping over puddles, hopping through hot coals, backing away from a snake, swimming across a river. A group story is also fun, with one person starting the tale and each person adding a segment.

Bobbing. For those who don't mind going underwater, bobbing can be used in the warm-up or as an aerobic activity. See Casey Conrad's *The New Aqua Dynamics* (1985), for ideas such as:

Bob in place 10 times, alternating R-L-R-L leg or arm forward.
Bob, move forward the width of the pool
Bob, moving sideways the width of the pool
Bob, moving under a partner

Muscular Strength and Endurance Activities

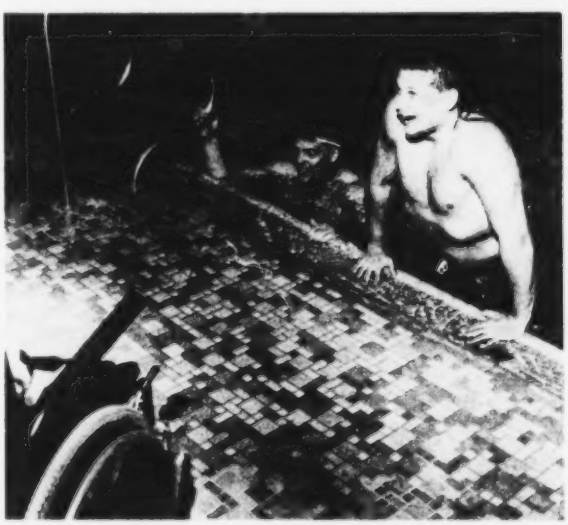
Muscular strength and endurance are necessary in performing daily activities such as lifting, carrying, pushing, and pulling. Muscular fitness is enhanced by working against resistance. That resistance can be supplied by body weight, hand weights, or water. Strength is enhanced by applying a maximal effort a few times (8-10). Muscular endurance improves if a moderate effort is applied for many repetitions (20-30 times). Water resistance can be increased or decreased by changing the speed of movement though the water or the amount of the body immersed in the water, or by changing limb or body position.

While strength is enhanced with water exercise, increases in the amount of force applied against the water are difficult to quantify. Muscular endurance can be increased and measured through increasing repetitions of an exercise. A program of 8-12 exercises should start with one set of 8-10 repetitions of each exercise and gradually increase until two or three sets can be performed in a workout. Alternatively, exercisers may start with one minute of each exercise, performing them as a circuit, and build up to two or three circuits of the program.

Body Toning Circuit. Write toning exercises on cards as with the aerobic circuit. Alternate upper and lower body exercises. It is also good to run across the pool to keep warm, so place odd numbers on one side of the pool and even numbers on the other side.

Left side of pool	*Right side of pool*
1. Arm sweeps: forward, back	2. Side leg swings right
3. Front pushups	4. Side leg swings left
5. Abdominal exercise	6. Leg scissors
7. Arm sweeps: down, up	8. Rear leg circles right
9. 10 pullups on starting blocks	10. Rear leg circles left

Body Part Circuit. A variation on the above circuit: After students become familiar with what exercises tone what body parts, write body parts on cards and have students decide what exercise to use.



Favorite Exercise Day. After students have experienced a variety of exercises, for one workout, have each person lead his/her favorite exercise for one minute.

Wet Head/Dry Head Workout. After students have learned the exercises, write the workout on the blackboard or poster and hang it where it is easily visible to all. Another idea: make two workouts, one for those who like to swim, and one for those who want to keep their heads dry. Allocate some lanes to swimmers and some to runners, making traffic rules clear to all to avoid collisions.

Dry Head Workout

1. Flutter kick 1 minute front, 1 minute back
2. 10 front push-ups, 10 back
3. 1 minute each side, leg swings right, left
4. Shallow and deep water run: 1 length out, 5 pull-ups on blocks, 1 length back, repeat
5. 20 abdominal curls
6. Stretch quadriceps, hamstrings, calves, back
7. Repeat 1-6 if time permits.

Wet Head Workout

1. Kick 4 lengths, different styles, using kickboard
2. 10-20 push-ups, any style
3. Pull 4 lengths, different strokes, using pull buoy
4. Swim to blocks, 20 pull-ups, swim back
5. Swim 4 lengths, one each: breast, back, side, free
6. Stretch back, pectorals, deltoids, triceps, lats
7. Repeat 1-6 if time permits

Partner Workout. Have each person write 4-5 exercises on a slip of paper (you may specify upper body, lower body, aerobic, flexibility, etc.) and put in a box. Mix them up. Divide class into groups of two or three as they draw their workout out of the box. Each person alternates leading an exercise until all exercises have been completed.

You can also design a workout entirely of exercises that require partners working together. Some of these exercises are described and pictured in *Water Workout* by Reed and Rose (1985).

Equipment Circuit

Here are a few ideas for setting up a circuit using readily available equipment. Make a card for each of the following stations, and have students work in pairs. You will need two sets of equipment for each station as noted.

Frog jump. 2 empty jugs. Hold jug in front of body, jump into air, knees on either side of jug, pushing jug under with each jump.

Aerobics with arm exercise. 4 jugs, filled with 1" of water. Jog in place and do slow bicep curls or arm extensions, holding jug in each hand.

Water wheel. 4 empty jugs. Holding a jug under each arm, bicycle feet near the water surface to pivot in a circle.

Arm push-pull forward. 2 kickboards. Place feet in a forward stride position. Hold kickboard vertically in front of body, with 4"-6" of board in water, push forward and pull back.

Arm push-pull sideways. 2 kickboards. Place feet in a side stride. Holding kickboard vertically in front of body, push and pull board side to side through water.

Knee tap. 2 kickboards. Let equipment float in front of body. With knee or foot, tap or flick board 5 times. This can be done with other equipment also.

Thigh toner. 2 pull buoys. Loosen buoy strap and slip one foot into pull buoy. Holding onto wall, swing leg forward and back or to the left and right. Repeat with other leg. (This could also be done with each arm to tone latissimus dorsi.)

Bicep/tricep toner. 4 hand paddles. Scull or tread with arms only.

Ball volley. 1 ball. Treading in deep end or supported in shallow water, volley a ball to a partner, counting the number of consecutive hits without a miss.

Toning Exercises

A variety of exercises used in water workouts are listed below by body part toned.

Lower Body

Quadriceps
- Flutter kick
- Forward kicks
- Front leg circles

Hamstrings/Gluteus
- Rear kicks
- Rear leg swings
- Rear leg circles

Outer Hip (Abductors)
- Side leg swing (out)
- Side leg circles
- Leg scissors (push out)

Inner Thigh (Adductors)
- Leg scissors (pull in)
- Leg overs

Calves, Ankles
- Flexion-extension
- Circling
- Toe raises
- Hopping, skipping

Upper Body

Upper Back
- Pullups on starting blocks
- Arm sweeps down

Midback
- Breaststroke

Shoulders
- Arm sweeps up
- Arm circles

Pectorals
- Wall pushups, hands wide
- Arm scissors

Biceps/Triceps
- Arm curls/extension
- Treading

Wrists
- Wrist circles
- Sculling

Flexibility

Stretching for flexibility should be done after each workout, at least 3 days per week. Perform one good stretch for each body area; hold 15-30 seconds. These may be repeated if time permits

Hamstrings. Face the wall and hold onto the gutter. With knees relatively straight, but not locked, baby step up the wall until tension is felt in the back of the thighs.

Quadriceps. Put a hand on the wall for balance. Grasp a heel behind your buttocks, keeping knee open at a 90 degree angle to prevent hyperflexion. Keep the abdominals tight and back straight to prevent back hyperextension.

Calves. Stand about 3' from the wall. Place hands on the wall and lean forward, stretching calves.

Back. With back to the wall, tuck each knee to chest, and hold. Pull knee across body and hold.

Triceps. Grasp elbow behind head. Hold at the point of tension.

Deltoid. Bring right arm across the front of the body and press in at the elbow toward the midline with the left hand. Switch.

Pectorals. With elbow relaxed (not locked), place right hand on the wall and rotate left, away from it, until tension is felt across the chest. Repeat with the other arm.

Latissimus dorsi. Clasp fingers together and stretch arms high overhead. Press slightly to the right, then left.

Other Possibilities: Group Activities

Relays. The goal in aerobic relays is not winning but maintaining a target pulse. Between running intervals, those on the team who are waiting at the wall may jog in place to maintain a target pulse. Relays are run as widths of the pool and may be repeated. Make teams of four, divide into roughly equal ability groups, and put shorter students in shallow water to be fair. All start with a hand or foot on the wall.

Running. Each person runs over and back, any style, and entire team cycles twice through the relay. This can be done hopping over on the right foot, back left, or skipping.

Back-to-back. Two people stand back to back, hook elbows, and run over and back. Variations: sideways or forward/backward with one partner kicking. This can also be done with all four teammates joining elbows.

Towing. One partner tows the other, any style mutually agreed on, the width of the pool. Switch and return.

Wheelbarrow. One kickboard needed. One partner lies prone, holding a kickboard in front and feet behind. The second person grasps the partner's feet and pushes the "wheelbarrow" the width of the pool. Switch positions and return. Repeat with other partners.

Kickboard Relay. Take a kickboard over and back as quickly as possible without holding it in your hands or teeth.

Human Baton. All four teammates travel together. One is the "human baton." The others pull the baton quickly to the other side of the pool, face up. Switch at each wall, until each has been the baton.

Inner tube. Get in the inner tube and sprint over and back, any style.

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Resources

CIRSA: Computerized Information Retrieval System in Adapted Aquatics. For details, send $1.00 to: CIRSA, Sue Grosse, 7252 W. Wabash Ave., Milwaukee, WI 53223.

Danmar Products, Inc., 221 Jackson Industrial Drive, Ann Arbor, MI 48103, 800-783-1998 or 313-761-1990.

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Physical Fitness Assessment: Some Questions and Answers

Francis X. Short

Regardless of age or gender, improvement of physical fitness is a critical goal in recreation and leisure programming for individuals with disabilities. Although physical fitness development is a primary concern of school physical education programs, its importance as a personal development goal warrants additional attention outside the education environment. Some benefits of a physical fitness program for individuals with disabilities include:

- Improved health (example: people with paraplegia are at much greater risk for heart attack than sedentary able-bodied people).
- Improved physical performance (example: athletes participating in programs sponsored by the United States Cerebral Palsy Athletic Association have been known to improve their functional classification as the result of a structured physical fitness program).
- Increased vocational opportunities (example: persons with cognitive disabilities are more employable when they possess sufficient strength, flexibility, and endurance for positions requiring manual labor).
- Increased personal independence (example: adequate levels of fitness are necessary to propel, manipulate, and transfer from wheelchairs).

Why Fitness Testing?

There are numerous reasons for testing in conjunction with any kind of a physical fitness development program. In adapted physical education a primary reason for testing is to determine if a student has a "unique need"; that is, is there evidence that a student should receive a specially designed program? Although assignment of grades or determination of "unique need" may not be critical reasons for testing in a recreation and leisure program, there are still compelling reasons for testing regardless of whether the program is educationally based or recreationally based. These reasons include:

- Identification of specific areas of strength and weakness that will aid in the establishment of appropriate goals and objectives.
- Determination of current ability to serve as a baseline by which to judge improvement.
- Provision of a basis for participant motivation (including awards).
- Evaluation of the effectiveness of the program.

What to Test?

Before physical fitness can be tested, and subsequently developed, it has to be defined. Although a universal definition of physical fitness does not exist, the contemporary view is that it consists of both health-related and performance-related components. Health-related components are those aspects of fitness thought to directly contribute to the organic well-being of individuals. Performance-related components (sometimes referred to as "motor fitness") are thought to contribute to physical proficiency or athletic ability. (In actuality, health-related components can be considered "switch hitters" in the sense they can also contribute to development of physical

proficiency; performance-related components, however, contribute to physical proficiency only.) Components of health-related and performance-related fitness are presented below. Components identified for testing by program leaders presumably would be a function of the goals of a particular fitness program.

Components of Physical Fitness

Health-Related	Performance-Related
Body Composition	Agility
Muscular Strength/Endurance	Speed
Flexibility	Power
Cardiovascular Endurance	Coordination
	Balance

Components of fitness are not always "pure," especially when measured in a field setting. For instance, a person's speed is also a function of his/her strength; in fact, some writers consider speed to be a subcomponent of the strength and endurance category. As another example, when cardiovascular endurance is measured by a distance run of some kind, testers must understand results are also influenced by the runner's body composition, muscular strength and endurance, speed, and coordination.

Still, categorizing physical fitness tests as a function of the primary component of fitness measured is a useful way of attempting to assess the multifaceted elements of fitness. Stated another way, no single test can adequately reflect one's total level of fitness; consequently a testing program measuring a variety of components is recommended.

What Kinds of Tests Can Be Used in Fitness Assessment?

Physical fitness tests are norm-referenced, content-referenced, or criterion-referenced depending upon types of standards associated with the test. Each type provides slightly different information by which to judge performance of individual participants. Program leaders can choose a particular type of test depending upon the purpose of testing and availability of test materials.

Norm-referenced

One purpose of fitness testing is to identify particular strengths and weaknesses and then to use that information to establish appropriate goals and objectives. Suppose you administer a 50-yard dash to a 12-year-old girl with paraplegia due to a spinal cord injury. She takes the test in a standard wheelchair and covers the 50 yards in 22 seconds. How do you judge her score? Is speed a "strength" or a "weakness" for this girl? What you would probably like to know is how does she compare with other paraplegic girls of similar age; you would probably like to have some comparative data or norms to assess her performance.

Norm-referenced tests provide users with this type of information. Norm-referenced tests allow users to compare scores of one participant to a set of standards developed by testing a similarly defined (e.g., gender, age, disability) group of individuals. Norm-referenced tests are useful for such purposes as determining relative strengths and weaknesses and as a basis for providing awards (which can be helpful in participant motivation). According to the Project UNIQUE Physical Fitness Test (Winnick & Short, 1985), for example, a 50-yard dash time of 22 seconds for a 12-year-old girl with paraplegia is actually quite good, falling in the 80th percentile.

Although helpful for certain purposes, norm-referenced assessment has some limitations. For example, norm-referenced tests tend to be "researcher-constructed" rather than "user-constructed" because of the large number of subjects who have to be tested. Users of the test are "stuck" with whatever researchers have developed; there is little flexibility in modification of a norm-referenced test.

Content-referenced

Content-referenced tests are strictly "user constructed" so program leaders may find they have the greatest day-to-day applicability in a physical fitness program for people with disabilities. Due to the many variations of disabilities, a program leader may not be able to find an appropriate standardized test for each participant. In this case, they should "invent" a test that appropriately measures one component of fitness and is appropriate to the needs of a particular participant. For example, suppose a participant is wheelchair-bound with spastic cerebral palsy and

the activity consists of negotiating a particular slalom or obstacle course as fast as possible to assess agility (i.e., chair mobility). There is no norm-referenced test for this. The program leader, however, can develop a content-referenced test by simply constructing the course, developing rules, and timing performance.

Content-referenced tests can be appropriate when the purpose of the testing is to determine current ability (establishing a "baseline") or perhaps when no other appropriate tests are available. Of course, one weakness is that there are no standards available by which to assess performance. On a day-to-day basis, however, most instructors probably would agree that the most important comparison is not with norms or other standards, but rather with the participant's own previous level of achievement. When performance standards are established in the initial administration of the test (e.g., completing the slalom course in 45 seconds), a criterion is established and subsequent administrations of the test become criterion-referenced.

Criterion-referenced

The premise of criterion-referenced assessment is that while it might be interesting to compare one person's test scores to those made by other people (norm-referenced), it is more relevant to compare that score to a pre-established performance standard, a "level of mastery." The American Red Cross, for instance, is not interested in whether a potential lifeguard is "above average" or "below average" (a norm-referenced comparison). They are concerned with whether or not a potential lifeguard has mastered the necessary abilities to provide adequate protection to swimmers under the lifeguard's supervision. The American Red Cross, therefore, employs a criterion-referenced testing procedure to certify persons as lifeguards or water safety instructors.

Professionals who are familiar with instructional objectives, such as those associated with a student's IEP, will recognize those objectives as other examples of criterion-referenced tests. If the objective reads, "Lynn will do 20 sit-ups in 60 seconds," a level of mastery has been established. In criterion-referenced assessment, participants either pass or fail, competency versus noncompetency. Lynn will need to do 20 sit-ups in 60 seconds to pass this test and meet the objective.

Practitioners interested in health-related fitness programming have been increasingly concerned about the limitations of norm-referenced assessment. For example, an inspection of norm tables for skinfold thickness (an indication of body composition) reveals that skinfolds tend to increase with increased age even though there is no physiological reason for this to occur beyond the developmental period. When adults, therefore, assess their degree of body fatness on norm tables they may stay around average for their age even though their skinfold thickness is increasing. They are getting fatter, but so is everyone else so norm tables fail to identify a potential problem.

Furthermore, if we are concerned that high levels of body fat contribute to a variety of health-related problems (including higher mortality rates) wouldn't it be better to identify acceptable levels of body fat in terms of skinfold thickness and compare to that standard rather than to other people? In essence, a "level of mastery" is established and that standard reflects a minimum level necessary for a health lifestyle.

So, in criterion-referenced fitness testing a question might be if the 15-year-old nondisabled boy runs one mile in 8 minutes, has he met minimum standards for cardiovascular efficiency? According to the standards for Physical Best (AAHPERD) the answer is "no" because a time of 7:30 is necessary for that age and gender.

An inherent weakness of criterion-referenced testing is that when standards are established arbitrarily and capriciously test results have little significance. For instance, the Red Cross must be concerned that their standards are not so easy that lifeguards they certify are incapable of doing the job; nor do they want them to be so difficult as to be unreasonable and unattainable for people with good aquatic skill.

What Norm-Referenced Tests Are Available?

Some of the more popular norm-referenced tests of physical fitness are given in the chart on the next page. (Addresses for acquiring those tests are provided at the end of the paper.) The name of the test is listed along with an indication as to whether norms are provided for the nondisabled (ND) or for those with mental retardation (MR), emotional disturbance

Norm-referenced Fitness Tests

	ND	MR	ED	LD	VI	HI	CP	SCI
Health Related Fitness Test (AAHPERD, 1980)	X							
Youth Fitness Test (AAHPERD, 1976)	X							
Buell's Adaptations (Buell, 1982)					X			
Special Fitness Test (AAHPERD, 1976)		X*						
Motor Fitness Test (AAHPERD, 1976)		X*						
President's Challenge President's Council, 1987)	X**							
Project ACTIVE (Vodola, 1978)	X	X	X	X				
Project UNIQUE (Winnock & Short, 1985)	X				X	X	X	X

* The Special Fitness Test was standardized on persons with mild mental retardation while the Motor Fitness Test was standardized on subjects with moderate mental retardation.

** The President's Challenge provides norms for the 50th and 85th percentiles only.

(ED), learning disabilities (LD), visual impairments (VI), hearing impairments (HI), cerebral palsy (CP), or spinal cord injuries (SCI).

For each norm-referenced test identified above, the number of test items (#), components of fitness, and appropriate age ranges are provided in the chart on the following page. The components of fitness include body composition (BC), muscular strength and endurance (SE), flexibility (FL), cardiovascular endurance (CV), agility (AG), speed (SP), power (PO), and coordination (CO). None of these tests include a measure of balance.

Components of fitness checked are those identified by test developers, with some adjustments to fit the vocabulary used in this paper.

When Should "Adapted" Versus "Regular" Norms Be Used?

Of the norm-referenced tests highlighted here, four provide norms for nondisabled ("regular" norms) and five provide norms for one or more specific disability groups ("adapted" norms). Comparisons to regular norms are generally appropriate (and, in fact, recommended) when the purpose is to determine if the participant has a unique need in physical fitness. In this context, unique refers to a need greater than the need that might exist for a nondisabled participant and consequently one that might require a special program for remediation. Determination of unique needs is an important element in an educationally based program but is less critical in most recreationally based programs.

Number of Test Items, Age Ranges, and Components of Fitness

	#	BC	SE	FL	CV	AG	SP	PO	CO
Health Related Fitness Test (ages 5-17)	4	X	X	X	X				
Youth Fitness Test (ages 10-17)	6		X		X	X	X	X	
Buell's Adaptations (ages 10-17)	2				X		X		
Special Fitness Test (ages 8-18)	7		X		X	X	X	X	X
Motor Fitness Test (ages 6-20)	13		X	X	X		X	X	X
President's Challenge (ages 6-17)	5		X	X	X	X			
Project ACTIVE (ages 6-16)	4		X		X				
Project UNIQUE (ages 10-17)	4-6	X	X	X	X				

Some experts suggest that regular norms should also be used to assess fitness levels of participants with disabilities such as visual impairments, hearing impairments, learning disabilities, emotional disturbance, and even mental retardation. Since vision is not necessary to perform a sit-up, for instance, scores obtained by participants with vision impairment should be compared to regular, rather than adapted, norms. A higher level of expectancy is thus conveyed and participants with disabilities can take pride in achieving standards established by nondisabled peers.

While there is certainly a good deal of validity to this approach program leaders who adopt it should recognize at least one potential drawback. Comparative research on fitness suggests that the fitness level of a "typical" subject with certain disabilities (HI, LD, ED, MR) is generally below that of the "typical" nondisabled subject (those with VI appear to be exceptions).

The most frequently suggested explanation for these differences is that individuals with disabilities are afforded fewer opportunities to engage in vigorous physical activities and consequently operate at lower levels of fitness. So, even though hearing may not be necessary to perform a sit-up, it should be recognized that attaining average levels of achievement associated with regular norms is a greater challenge for the participant with hearing impairment than for the nondisabled individual. The mean sit-up score for 16-17-year-old hearing impaired boys, for example, is 38.0 compared to 44.6 for similarly aged, nondisabled boys. A score of 38 would place the boy with hearing impairment at the 25th percentile on the regular norm table of the Project UNIQUE Test.

Utilization of adapted norms is most appropriate when the conditions of the regular test have been altered in some way (e.g., the 50-yard dash is performed in a wheelchair rather than on foot) or when program leaders want to account for the effects of a particular disability on fitness performance. Adapted norms can also be helpful to program leaders in establishing appropriate goals and objectives.

What Criterion-Referenced Tests Are Available?

The two most popular criterion-referenced tests of physical fitness are Physical Best (AAHPERD) and FITNESSGRAM (Institute for Aerobics Research). Items for these tests are identical:

- One mile run/walk (cardiovascular endurance)
- Skinfolds (body composition)
- Sit and reach (flexibility)
- Sit-ups (abdominal strength and endurance)
- Pull-ups (upper body strength and endurance)

Although the items are identical, the criterion-referenced standards associated are not. Generally speaking, Physical Best has more rigorous standards than those associated with FITNESSGRAM. In both cases, however, these standards are thought to represent minimal levels of health-related fitness as conceptualized by the test developers. Neither test provides adapted standards for any disability group. Program leaders, therefore, must decide if the published standards are appropriate for their participants and, if not, arbitrarily adjust the standards. (Recent changes allow program leaders to also adjust the norm-referenced standards associated with the President's Challenge to qualify youngsters with "special needs" for the Presidential, National, or Participant awards sponsored by the President's Council on Physical Fitness and Sports.)

Criterion-referenced health-related fitness standards associated with Physical Best and FITNESSGRAM may have good utility for individuals with certain disabilities and should not be dismissed by program leaders. Providing the participant is able to perform the test without modification and does not possess a physical disability or health impairment, comparison with standards associated with these tests should be appropriate.

Rationale is that whatever standard is deemed to be "healthy" for a nondisabled individual should also apply to a disabled individual who is not physically or health impaired. Due to the tendency toward lower initial levels of fitness and generally more sedentary lifestyles, achieving these standards will be more difficult for most participants with disabilities. Still, these standards are appropriate objectives and worthy of pursuit by many individuals with disabilities.

However, when the participant has a physical disability, published criterion-referenced standards have little utility. As an example, consider the one-mile run/walk standards for Physical Best. The values are not relevant for individuals with spinal cord injuries (paraplegia), for example, for several reasons.

First, people with paraplegia complete the one-mile run by propelling a wheelchair with their arms. Research has indicated that oxygen consumption during maximal arm exercise is only about 67% of that obtained by running or cycling, suggesting wheelchair users will not be able to attain the same maximum aerobic power as able-bodied runners. Second, spinal cord injury causes physiological changes (e.g., limited active muscle mass, ventilatory muscle paralysis, and poor vasomotor control and thermoregulation) which also serve to reduce maximum aerobic power (Figoni, 1984). Consequently there is a need to develop criterion-referenced standards reflecting the specific circumstances relating to physical disabilities or health impairments.

An initial attempt at establishing criterion-referenced standards for youngsters with paraplegia was made by Marvin (1989). She identified a four-item battery including a 12-minute wheel, sum of skinfolds (triceps and subscapular), a 50-yard dash, and pull-ups. A modified version of her results is presented on the next page.

It is important to note that Marvin's standards have not been validated in any systematic way. Still, in the absence of other criteria, program leaders may find these standards a good starting point in developing a criterion-referenced program for youngsters with spinal cord injuries.

What Other "Tools" Exist for Fitness Testing?

Program leaders might wish to assess the level of intensity put forth by participants in either a testing or training environment. In recent years researchers in adapted physical activity have given increased attention to application of Borg's (1970) ratings of perceived exertion (RPE) to populations with various disabilities.

Borg developed a 15-point psychophysical scale designed to assess one's perceived level of exertion.

Criterion-Referenced Standards for Youngsters with Paraplegia

	12-minute Wheel (yards)		*Sum of Skinfolds (mm)*		*50-yard Dash (sec)*		*Pull-Ups (no.)*	
Age	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
5	525	525	12-29	16-35	29.0	32.0	1	1
6	575	575	12.29	16.35	28.0	32.0	1	1
7	600	600	12-29	16-35	27.0	32.0	1	1
8	675	675	12-29	16-35	26.0	32.0	1	1
9	675	675	12-29	16-35	25.0	28.0	1	1
10	700	700	12-29	16-35	24.0	27.0	1	1
11	750	750	12-29	16-35	23.0	26.0	2	1
12	750	750	12-29	16-35	22.0	25.0	2	1
13	850	800	12-29	16-35	21.0	24.0	3	1
14	875	800	12-29	16-35	19.0	23.0	4	1
15	900	800	12-29	16-35	18.0	22.0	5	1
16	900	800	12-29	16-35	17.0	21.0	5	1
17	900	800	12-29	16-35	16.0	21.0	5	1
18	900	800	12-29	16-35	15.0	19.0	5	1

This subjective scale is said to correlate with such exercise sensations as changes in heart rate and ventilation, feelings of breathlessness, sweating, muscle fatigue, and lactate accumulation (Arnhold, Ng & Pechar, 1992). Research pertaining to the validity and reliability of the scale suggests it has "relatively accurate estimating qualities" (Birk & Mossing, 1988). Stated another way, the scale can be helpful to practitioners in assessing and prescribing exercise intensity for participants in fitness programs. The RPE scale has been used successfully with subjects possessing mental retardation, asthma, spinal cord injuries, and cerebral palsy.

Monitoring exercise intensity is a critical element in any fitness program. Little progress will result, for instance, when intensity is not challenging enough. Conversely, if intensity is too great there will probably be little enjoyment for participants, resulting in reluctance to continue with the program.

Perhaps the most popular way of informally measuring intensity among fitness enthusiasts is to periodically check heart rate. Although applicable for many individuals with or without disabilities, this has some limitations. For instance, heart rate acceleration in response to exercise tends to be limited among individuals with quadriplegia or hemiparesis (Shephard, 1990); consequently, it would not be a good indicator of exercise intensity. Also, individuals with motor control problems, including cerebral palsy, may find taking pulse rates to be difficult, if not impossible, due to an unsteady hand (Birk & Mossing, 1988).

Inasmuch as the RPE scale is appropriate for a number of disabilities and correlates well with a number of physiological indices (including minute ventilation, heart rate, and oxygen consumption), program leaders are encouraged to experiment with the scale as both a testing and training tool. When the RPE scale is used as a training tool, Burke and Humphreys (1982) suggest that participants should attempt to work at about a 14 or 15 on the scale.

When utilizing the RPE scale, program leaders should realize that validity of the scale is probably a function of the exercise experience of participants. For participants to accurately rate different levels of perceived exertion it is necessary for them to have had experience with the different sensations associated with those levels. Thus, the scale probably has less utility for novice exercisers than for veteran exercisers (Birk & Mossing, 1988). Another caveat is that although appropriate for a number of different disabilities, RPE is not recommended for use with participants who have multiple sclerosis (Holland, Bouffard & Wagner, 1992).

How Can I Obtain Copies of Tests Mentioned Here?

Several of the tests discussed in this article were published by AAHPERD, but some are no longer in print. Individuals interested in ordering copies of the Physical Best testing materials should contact:

AAHPERD
1900 Association Drive
Reston, VA 22091 (703) 476-3430

Addresses and phone numbers for other tests are:

President's Challenge
Poplars Research Center, 400 E. 7th Street
Bloomington, IN 47405 (800) 258-8146

Project UNIQUE
Human Kinetics Publishers, Inc.
Box 5076
Champaign, IL 61825-5076 (800) DIAL-HKP

Project ACTIVE
Joe Karp
13209 N.E. 175th Street
Woodinville, WA 98072 (206) 485-0427

FITNESSGRAM
Institute for Aerobics Research
12330 Preston Road
Dallas, TX 75230 (214) 701-8081

Editor's Note

In April 1992, the American Alliance for Health, Physical Education, Recreation and Dance entered into a memorandum of agreement with the President's Council on Physical Fitness and Sports, announcing the initiation of a cooperative and coordinative effort for one national physical fitness assessment and education program. According to the press release regarding the agreement, this program will be entitled the President's Youth Fitness Program. This joint effort will assist in achievement of objectives of the Physical Activity and Fitness priority of Healthy People 2000 and help to advance the cause of youth fitness and health.

The President's Youth Fitness Program will feature the Physical Best test items and educational materials and the President's Challenge award system adapted to criterion-referenced standards. Normative data will be included in the proposed program, without compromising health-related fitness testing and assessment.

For additional information, contact either the American Alliance (AAHPERD) or President's Council (PCPFS).

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